THE AMERICAN GAS LIGHT JOURNAL

REDMAN & KENNY, N.Y.

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME LXXXV., No. 19. Whole No. 1,639. | NEW YORK, MONDAY, NOVEMBER 5, 1906. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. C. E. SANDERSON, Manager. THOMAS J. CUNNINGHAM and ELBERT P. CALLENDER, Editors.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

Published on each Monday of the year, at No. 42 Pine Street, New York.

Telephone.—2996 John.

Remittances should be made either by post office order, express money order, registered letter, or bank draft on New York, payable to the order of A.M. Callender & Co.

Terms of Subscription, Including Postage.—For the United States and Canada, $3 per annum. European countries, $5 (£1—25 francs).

The American News Company, Nos. 39 and 41 Chambers street, New York, are agents for this JOURNAL. Newsdealers will send orders to them. All payments to be made in advance. Single copies, 10 cents.

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BRIEFLY TOLD.

THE MEETING OF THE PHILADELPHIA SECTION OF THE ILLUMINATING ENGINEERING SOCIETY.—The Philadelphia meeting of the Illuminating Engineering Society was held recently in that city, 1122 Girard street, the attendance being excellent and the proceedings interesting. Mr. Isaac H. Francis, Jr., acted as Chairman, in the absence of Mr. Horatio Foster, President. Mr. J. B. Klumpp occupied the Secretary's desk, in the absence of the Secretary, Mr. Walton Forstall. The opening address was made by Mr. Louis B. Marks, of New York, President of the Illuminating Engineering Society, who cleverly called the attention of the Society to the magnitude of the general subject of illumination. He also outlined the plan and scope of the meetings, and made an urgent plea for the subscribing of additional funds for extending the work of the Society. Mr. John B. Myers abstracted the paper by Mr. J. E. Woodwell, U. S. Government Lighting Engineer, Washington, D. C., which had for its subject "Data on Indoor Illumination" Mr. Henry D'Olier read the paper by Mr. Ernest C. White, of Winnipeg, Can., on the "Application of Photometric Data to Indoor Illumination." The Secretary informs us that both of these papers will appear in the next number of the "Transactions of the Society," which information prompts the thought that they would be given far wider publicity if first printed in the AMERICAN GAS LIGHT JOURNAL, for instance, and such publicity it seems to us would neither harm the Society nor devitalize its "Transactions." However, that is a matter for its Directors to determine. The papers brought out good discussions, in that they were pointed and illustrative. The Acting Secretary urged the members to put forth their best efforts towards securing an increased membership, and in respect to one's probable success in such efforts he mentioned the fact that he had secured 12 additional members within an hour of the afternoon preceding the current session.

NOVEMBER MEETING, ILLUMINATING ENGINEERING SOCIETY.—Dr. A. H. Elliott, Secretary of the named Society, informs us that its November meeting will be held in the Edison Auditorium, 44 West 27th street, New York, at 8:15 P.M., the 9th inst. Papers will be read on the following subjects: "Fixture Location in Residence Lighting," by Mr. F. N. Olcott; "Fixture Design and Location," by Major E. L. Zalinski; "Location of Lamps and Illuminating Efficiency," by Mr. Preston S. Miller.

DIRECTORY OF THE STEVENS ALUMNI.—We are indebted to the courtesy of Mr. J. H. Cuntz, Secy.-Treas. of the Alumni Association of the Stevens Institute of Technology, for a copy of the "Directory of the Alumni of the Stevens Institute of Technology," which was compiled and published some time ago under the authority and direction of a Committee of the Alumni Association. The Directory contains well arranged lists of the many divisions of engineering, and other avocations as well, in which the men from Stevens are engaged. The listing also embraces other particulars respecting the several fields of active industry in which the men are engaged, as well as the States, both at home and abroad, where their avocations are being followed. An examination of these listings shows how potent for good the Institute has been, and foreshadows how much greater its future in fitting its students for engineering work is to be. Truly did the founder of the

LIBRARY OF CONGRESS. NOV 5 1906 SMITHSONIAN DEPOSIT.

Institute build—and his own fame as an engineer was world-wide—when he planned the noble work that enables the youth of to-day committed to its seeding to reap the harvest of fortune and fame that is the sequel of its teachings. The Directory, from the technical standpoint of the printer, leaves nothing to be desired, for it is neat and portable, and plainly shows marks of the printer's best art. While the Committee is undoubtedly entitled to major portion of the credit for the book as a book, we imagine that Secretary Cuntz bore the brunt of the burden in its preparing.

CURRENT COMMENT.—

OWING to the marked increase in the Eastern division of the business of the Western Gas Construction Company, of Fort Wayne, Ind., its New York offices have been removed from their former location in the Wall Street Exchange Building to roomier quarters in the Broad-Exchange Building, in which commodious structure the Company occupies suite Nos. 1907 to 1909.

WORD from Columbus, O., is to the effect that work on the new artificial gas plant of the Columbus Gas and Fuel Company is progressing satisfactorily, and that it will be ready for use early in January. The counting rooms of the artificial division will be moved to the offices of the natural division some time in December, which substitution will result both to the advantage of the Company's customers and to itself.

NOTICE has been given to the shareholders of the Columbia (Pa.) Gas Company that a special meeting has been called for the 18th prox., on which date a vote will be taken on the proposition to increase the capital from $60,000 to $125,000.

A CORRESPONDENT in Spokane, Wash., informs us that it is again asserted that Mr. Howard Elliott will resign his position with the Northern Pacific Railway Company to assume the Presidency of the Massachusetts Gas Company.

WE understand that an application will shortly be made for a franchise to construct and operate a gas plant in Devil's Lake, N.D. What's in a name?

AN application for a charter for a Company, to be known as the Tioga County Gas Company, has been applied for by Messrs. F. Brubaker, W. W. Hess and W. V. Christie. The Company proposes to operate in Tioga county only, and its promoters are all residents of Philadelphia.

IN the case before the court of last resort, in the instance of McCarty vs. Clinton (Mass.) Gas Light Company, taken up from the Superior Court on exception by plaintiff from its ruling, the exceptions were overruled. The case was one in tort for personal injuries to Jeremiah McCarty, an engineer employed by defendant, who was found dead on the floor of the engine room owned by defendant. The final opinion was rendered by Judge Knowlton, who in his decision said: "It is unnecessary to consider other parts of this case, for there is nothing to show that the plaintiff's husband, at the time of the accident, was in the exercise of due care. He was found dead on the floor of the engine room, in the passageway between the rapidly revolving flywheel and the wall of the building. He was the engineer in charge of the engine, and no one else was present at the time of the accident. His skull was cut off, and it seems likely that this was done by the flywheel or some of its attachments. If it is possible that the accident happened while the deceased was in the exercise of due care, it is equally possible and more probable that his negligence was one of the causes, if not the sole cause, of his death. In Tyndale vs. Old Colony R. R. Co., 156 Mass., 503, this court said: 'Where there is an entire absence of evidence as to what the person killed was doing at the time of the accident, it is not enough to show that one conjecture is more probable than another. There must be some evidence to show that he was in the exercise of due care.'"

THE Buffalo (N. Y.) *Courier* reports that ex-Supreme Court Justice Hatch, acting for the Albany Gas Company, has applied for a writ to restrain the State Gas and Electricity Commission from hearing proceedings with a view to the regulation of gas prices. Upon the result of the argument thereon in Supreme Court will rest the fate of the fight which is being made in Buffalo by Corporation Counsel Desbecker for a reduction in prices. Judge Hatch, who has acted for the Syracuse Gas Company and the Albany Company, will base his contention upon the argument that the appointment of such Commission is unconstitutional. The qualification of the Legislature to regulate gas prices is not questioned, but the settlement of the question hinges upon its right to appoint a Commission invested with such powers. The Corporation Council and his assistant, Mr. Wm. B. Frye, have been extremely busy for several weeks in preparing the statistics which they will present to the Commission when it assembles here on December 13th. The Gas Company at the initial sitting of the body was required to file answers to 75 questions which were submitted to them by the Corporation Counsel, and it is expected that the information will be soon forthcoming.

[AS FURNISHED BY THE OFFICIAL STENOGRAPHER.—Continued from page 757.]

PROCEEDINGS, FIRST ANNUAL MEETING, THE AMERICAN GAS INSTITUTE.

HELD IN THE AUDITORIUM HOTEL, CHICAGO, ILLS., OCTOBER 17, 18 AND 19, 1906.

FIRST DAY—MORNING SESSION.

Discussing Report of Governing Board.

The Secretary—With reference to the report of the Committee appointed on the classification of names, I would say it embraces 881 names which have been published in this pamphlet, and to the report of the Committee in reference to membership in the Ohio, Western and American Gas Light Associations, is as follows: "We, the Presidents and Secretaries of the American, Ohio and Western Gas Associations, do certify to the correctness of the classifications of the applications received and submitted herewith as respecting the respective Associations, of which we are the officers.

"CHAS. F. PRICHARD, Pres., American Gas Light Association,
"GEORGE G. RAMSDELL, Secy., American Gas Light Association,
"K. M MITCHELL, Pres., Western Gas Association,
"JAMES W. DUNBAR, Sec., Western Gas Association,
"B. W. PERKINS, Pres., Ohio Gas Light Association,
"T. C. JONES, Sec., Ohio Gas Light Association," Committee.

The report includes favorable action on the 881 names which have been sent in by the members of the Ohio, Western and American Associations to become charter members of the American Gas Institute. Some have been received since this supplemental list was reported. The report of the Committee includes those names also. As the report indicates, 30 days will be given for any who may have failed to file their applications, or who may have failed to be reported, to send in their applications to become charter members of the American Gas Institute.

The President—Gentlemen, what is your pleasure on this report?

On motion of Mr. Miller the report was received, and it was ordered that the recommendations be considered in detail.

The Secretary—The first paragraph is in reference to the banquet. The Governing Board recommends that, in accordance with the postal card vote received, this year we have no banquet.

Mr. Shelton—Mr. President, may I say a few words on that subject? I have received a good many comments, opinions and criticisms in connection with the banquet (or its absence), which has come to be as we all know, and has been for years, a characteristic feature of many of these meetings. The Institute in starting out, through the Committee appointed to make arrangements for the meeting, resolved that it would not be the beneficiary of our trade friends, that it would not come to this city of Chicago again and ask our good friends here to pay considerable sums to entertain us, and that if we had a banquet we would pay our individual proportion. It was certainly to my mind the right ground to take. And so, on behalf of the Committee of the Institute, it was decided to take a vote of the membership as to whether each individual cared to pay the necessary sum for the entertainment, to consist mostly of the banquet. As the Secretary has pointed out the vote developed an apparent majority against the banquet, and accordingly the Committee on Arrangements, perhaps preferring to play safe, decided that we would not have a formal banquet on this occasion, and that decision in a sense was ratified by the Governing Board yesterday. There are two views or ways of looking at that vote which was taken. There were 209 replies against the banquet, or not so much that, perhaps, as it was there were 209 individuals who did not care to pay the necessary $10, but there were, on the other hand, almost an approximately equal number of gentlemen who did say they wished a banquet, and would pay the necessary $10 for such a purpose. Now it has been thought hardly fair that those gentlemen who come here wishing to have the pleasure of dining together should be debarred from that because an approximately equal number did not care for it. In addition to that situation some complications arose locally, which the Committee on Arrangements encountered despite good work on their part, and with the result, as I have said, it has been decided there would be no "official banquet," but there has been a movement among a number of gentlemen who feel that there is nothing in the world to hinder having a dinner of gas men informally, and without some of the frills that sometimes characterize banquets. In brief, it has been felt wise to after all refer the question back to you gentlemen on the floor to decide. There is still time to arrange for an informal "subscription dinner" (if we choose to so call it) to-morrow night in this hotel, provided a sufficient number care to do it. There is nothing in the world to hinder any of us who would like to participate from getting together and bowing the old Associations out

and welcoming the new, by having a time of good fellowship and a good dinner. It will cost $10 to one willing to pay it, and there is nothing in the world about it that is obligatory at all. However, the matter has been thrown squarely before you all. You are all here, and it rests with you gentlemen to say whether you care to meet together to morrow night, but on a basis that will cost $10, because it is proposed to have a pretty comfortable, satisfactory sort of a dinner. If 50 or 75 or 100 are certain in your minds that you would like to participate in such a way, or if some such number indicate that they would like to participate in a dinner, that will be enough to warrant the making of certain arrangements which will have to be made soon, and all you will have to do is to pledge yourselves to sign the subscription paper and pay your $10 afterwards. There seems no other way to do but to throw it back to you to decide whether we shall have a gas man's dinner together, to bury the old Association and start the new. I am going to ask you, therefore, who enjoy that feature of our meetings, if you will kindly hold up your hands. Those who vote in the affirmative kindly hold up their hands. Will the Secretary please make a count?

The Secretary—71.

Mr. Shelton—That number is sufficient to warrant making the arrangements. I think probably a good many more will come in before we get through. I do not believe there is any need of taking the negative vote, particularly because it is not a question, really, before the Institute to decide. It is simply a question of seeing if there are enough of those who care to have the dinner to warrant directing the hotel to make the necessary arrangements.

The Secretary—The next paragraph is in reference to adopting the badge recommended by the Committee, which is the one which you see here in the designs on the wall back of me.

The President—We will hear the report of Mr. Shelton for the Badge Committee.

Mr. Shelton—The selection of a badge is not the most important thing in the world, for the Institute will do very good work for the gas industry if it never should have one; but it seems appropriate that it should have a suitable badge for such convenience or pleasure as it may offer or give, and a Committee on Badge, consisting of Mr. William McDonald and myself, was appointed. In considering the matter our main thought was that an appropriate badge, if possible, should be one that would incorporate a characteristic feature of each of the merging Association badges, so that in a sense the new badge would be a charter badge, wherefore, no matter what other Associations may come in the future, and possibly ultimately merge or combine with the Institute, they would not be able to disturb the charter position of the three Associations that already form this Institute by a merger as that would be perpetuated, in a sense, in the design of the badge. We, therefore, endeavored to incorporate features from the Ohio, the American and the Western Association badges. In addition it was thought a change in color might tend to differentiate a little from the red and blue heretofore mostly used, so it was suggested that we make it a green and gold badge this time. It was also felt that, artistically speaking—and this was said by people outside of the gas business—the American badge was the best design of any of the existing badges, so that the Committee aimed to adhere somewhat to the general effect of the American badge, and yet to specifically incorporate some of these certain other features as stated. The result is before you in two designs. Number 1 includes the holder of the Ohio, the setting sun and pipes of the Western, and the torch of the American. The criticism made of the design was there was a little too much endeavor to get too much into a small space. The opinion finally prevailed that this badge, No. 2, was the stronger pattern, that the torch was a little bit larger, and that the setting sun was in evidence. The Ohio men said that inasmuch as their O encircled the whole they were satisfied. At any rate, it is the choice of the Committee on Badge. It has been suggested, however, that the circle alone tends towards a button effect, and that the "ear" at the bottom of the American badge be added. This is the formal report which was prepared and handed to the Committee on Merger:

To the Governing Board, American Gas Institute: Gentlemen—The undersigned were appointed a Committee to make recommendation in the matter of suitable badge for the American Gas Institute. We have received designs and prices from several makers and submit the accompanying design as our choice. It is our recommendation that, if your Board and the Institute accept this choice, final bids be procured, and that the badge be made up of 14-karat gold, with a 10-karat safety lock pin, similar to the same device on the pin that the American Gas Light Association used. Further, that an additional price be named for engraving the initials or name of the owner, when desired; and finally that, *other things being equal*, the business be continued with the maker who has for many years supplied the American Gas Light Association.

We further recommend that badges for members at large, of all classes, be made up with green enamel; that the badge of the President be made up with white enamel, the badge of the Vice-Presidents with blue enamel, and of the Secretary with red enamel. That the Institute be authorized to contract for 1,000 as the price basis, to be delivered in suitable lots on call, and to be paid for as delivered, and that the charge to members be cost, plus 25 cents for postage, registration and recording, and that all badges be put out under the following rules, which are to be printed and incorporated in the published notices of the Institute:

1. The badge of the American Gas Institute, adopted October 17th, 1906, shall consist of the design as above.

2. Each badge shall be numbered and registered with the name of the owner in the records of the Secretary.

3. The price of each badge shall be $3.75, which is to include forwarding charges by the Secretary to the recipient. A further charge of —— cents shall be made if the recipient requests his name engraved on the back thereof.

4. It shall be expressly understood that if a member resigns or is dropped from the Institute, he shall return his badge and receive therefor the sum of $2.

Respectfully submitted,
WILLIAM McDONALD,
F. H. SHELTON, } Committee.

The President—The recommendation of the Committee is before you. It is approved by the Governing Board and it is now before you to accept or reject.

Mr. Shelton—If you like it approve it. If you dislike it vote it down and appoint another committee.

Mr. Pratt—I move that the report of the Committee on Badge be adopted. [Seconded.]

Mr. Donald McDonald, Louisville—Well, is this, Mr. President, just what we want? I move to amend by substituting this other sketch. I think the badge of the Institute ought to say what it is. I do not see as the setting sun is in accordance with the principles of the business. If you have a badge with a gasholder on it why everybody knows at once, as soon as he sees it, that it is in some way connected with the gas business. It seems to me this other badge is the more appropriate, and I move to amend Mr. Pratt's motion by adopting the report of the Committee, but substituting the first badge instead of the second.

The President—One reason why this badge was chosen was this: Exact sketches were made of the two badges, and the detail was too great in this one to make it effective. That was one thing which influenced the choice of the Committee.

Mr. D. McDonald—It does not seem to me, Mr. President, that the other one has anything about it which shows in particular that it is a gas man's badge.

Mr. McIlhenny—It has the three pipes.

Mr. Norris—I was about to say that it shows the rising sun, and the Institute is a rising sun.

Mr. Egner—Instead of placing the letters, A. G. I., I do not see why we could not put on "American Gas Institute." Then everybody would know at once it was a badge distinctive of a gas association. I would move that, instead of putting on just the letters we put on the full name, The American Gas Institute.

Mr. Roper—Mr. President, I think we ought to change those letters. A man looking at that as it stands would be apt to think it was a G. A. R. badge, which is pretty common, you know. A man looks at it, and he says, "there's a G. A. R. man." I lost an arm in it and because of that I am a little sensitive on that point. I have been asked that question too many times. I think it would be a good idea to put on the name.

Mr. Hyde—I move an amendment that the pipe be removed from the circle, and that the name "American Gas Institute" be added. That the name be spelled out in full. [Seconded.]

The President—It is moved and seconded as an amendment to the original motion that the pipe be left out of the circle, and that the name, American Gas Institute, be put on in full. All in favor of the amendment will please say "Aye." Contrary minded, "No." I cannot decide it without you vote, gentlemen. All in favor of the amendment will stand up. The amendment is carried. I will now put the original motion as amended, that the report of the Committee be accepted as amended. All in favor of the motion say "Aye." Contrary minded, "No." It is carried.

The Secretary—The next section is in reference to furnishing the Proceedings in full to the various gas journals, they to publish them in full, paying for the additional copies such expense as is incurred for

typewriting, and with the understanding that such Proceedings must be published in full as handed over to them by the Secretary, and if they wish to abridge that they are not to be permitted to do so, or to publish the abridgment until it has been approved by the Secretary.

Mr. Ramsdell moved its adoption. [Seconded.]

The President—It is moved and seconded that that portion of the report be adopted. Any remarks?

Mr. Egner—I noticed after the last meeting of the Western Gas Association a report of our proceedings published in one of the journals which was very much garbled. In fact, you would hardly know it; whereas in another of the journals it was quite full. Now I do not believe in discriminating one against the other, or anything of that kind, but I do believe it would be for the benefit of the American Gas Institute to have an official organ. I assure you, gentlemen, I have not been asked to say these words. It is entirely of my own free will and accord that I make these remarks, but I have noticed that the most successful Gas Associations are those which have an official organ. One which I believe is the most successful of all Gas Associations, namely, the German Association of Gas and Water Business Men, have an official organ, the *Journal für Gasbeleuchtung*. Now, if the other journals wish to publish the gas news of the Proceedings I believe that they should have the right to do so, and should be furnished with the information and with the Proceedings if that is thought best, in some such way as is recommended here. But I do believe, gentlemen, that we ought to have an official organ, and if it is in order I would like to make a motion that the AMERICAN GAS LIGHT JOURNAL be made the official organ of the American Gas Institute. We have, of course, grown very much. We have grown to be a large and strong body, but I do like to stand by an old friend. I think it would be very proper and would help the Institute if that should be done When the gas business was very weak and our Gas Associations were few and small in numbers, the AMERICAN GAS LIGHT JOURNAL used to send a reporter to take our Proceedings, which they published and paid for them all at their own cost. I can very well remember that, as can many of the men who are old now, and it was a great help to the gas industry at that time to have that information given out in the published Proceedings when the business was young in this country. If it is in order, Mr. President, I would like to move that the AMERICAN GAS LIGHT JOURNAL shall be the official organ of this Institute.

The President—I would like to suggest that Mr. Egner defers this matter until the time proper to discuss it is reached.

Mr. Doherty—If I may, I want to interject the suggestion right here, that if the papers are to be published by the gas journals, or they are to be extracted, or there are to be digests published of them, they ought to be submitted to the authors before they are so published. The journals instead of being allowed to publish such as they think proper of the papers or proceedings, and without caring anything for the opinions or wishes of the authors, I think should be put under some proper restriction in regard to this matter so that the authors shall have something to say about it. I would not want a paper of mine to be published in extract without having an opportunity to revise it, and I hope that that will be required. Regarding the official organ, I do not believe in the Association having one at all.

The President—Do you make that as a motion, Mr. Doherty, or will you put it in the form of a motion?

Mr. Doherty—Yes. I will make it as a motion, Mr. President, that the extracts from the papers shall only be printed with the consent of the author of the paper. That should be as an amendment rather.

The President—You make that as an amendment to the motion to adopt the recommendation of the Board?

Mr. D. McDonald—Mr. President, I make the point of order that the question of an official organ is not before us, and ought uot to be considered.

The President—It is not being considered, Mr McDonald. Gentlemen, it has been moved, seconded and discussed that the report be accepted as reported by the Board of Control, and, as amended by Mr. Doherty, that no abridgment shall be made in the papers, if they are published by the GAS JOURNALS, without the consent of the authors. All in favor of the motion will state it by saying "Aye." Contrary minds, "No." The motion is carried.

The Secretary—The next section is, in reference to advertising in the publications of the American Gas Institute, that the American Gas Institute in the publication of its proceedings shall solicit no advertising matter.

The President—What is your pleasure, gentlemen, in regard to that?

Mr. Ramsdell—Move it be adopted.

Mr. Doherty—Do I understand now, Mr. President, that the question is under that motion that the Institute would be prohibited from soliciting advertisement.

The Secretary—That no advertising matter be contained in the publication of the Proceedings of the Institute.

Mr. Doherty—I would like to suggest that that matter perhaps deserves some serious thought. Many of the members of this Institute probably fail to realize the vast cost of some of the publications that have been brought out by some of the individual associations. I know of one or two publications that have cost to exceed $3,000. The entire revenue of this Institute will not be to exceed $8,000. How it is going to publish anything of a very ambitious character without securing outside aid of some sort I do not know. You certainly cannot do it on that amount of money. This is done, I presume, for the protection of the gas light journals. I am as anxious as anybody else to protect the gas light journals, but I do not want to see the work of the Institute crippled in value, or lessened, simply to "protect" those journals. There is no man here more friendly to them than I am. A while ago I observed that one official notice of one department was paid for when it was inserted in one of the gas light journals. The department paid for the notice to help out the work. And I want also to make the suggestion, Mr. President, that advertisements have been secured for some publications that I know of that the gas journals cannot secure and do not secure. There is no reason why we should be excluded from securing the benefit of some of that revenue simply to protect the gas journals if it does protect them. I do not believe that the gas journals will be hurt in the least by the insertion of advertising matter in the publications of the Institute, but whether they are or not, the Institute work must go forward. There is no question of sentiment about it. That work must go forward, and I cannot see where we are going to get the revenue from any other direction to carry that work on if this source is cut off.

Mr. A. E. Forstall—As the mover of that resolution in the Governing Board I wish to say I think that most of the members of the Institute will understand I did not make that section for the sake of protecting the gas light journals. I am not in the habit of going around protecting the gas journals. I have other things to do. I made that motion for the sake of the dignity of the Institute. I have always felt that it was beneath the dignity of any association of this kind to publish anything that it could not pay for out of its own funds, and for the sake of publishing such things to go about soliciting advertisements. I dislike particularly to see a book come to me claiming to be issued by an association but which is paid for by advertising. I made that motion in order that the Institute should not be put in that position. It is not a question of protecting the gas journals at all. The gas journals can look out for themselves. It is a question of protecting the dignity of the Institute.

The President—There is no motion before the House. If some one will make a motion we can discuss this in order.

Mr. Doherty—I move that that section of the report of the Governing Board be rejected. I would like to have the reports issued by this Institute amount to something, and I do not think that we should shut ourselves off from this source of revenue if it should be needed. And I would like to say to Mr. Forstall that I had no wish to make it appear that there is any particular love for the gas journals. I think, as he does, that they can take care of themselves; but I cannot see any reason for this unless it is a move for the protection of the journals. It is all very well to preserve the dignity of the Institute. You have a very dignified organization, but I really believe that what we want is results—good practical results—and we cannot get them, or get what we should get, on our present income. I cannot see any possible use in cutting off our income. If we do that from where are we going to get our income? If this motion is accepted, then I think those who vote for its acceptance should tell us where we are to get this necessary additional income.

Mr. Bigelow—I do not wish to be understood as opposing this motion. However, I do not think that any gas journal in the field would object in the least to advertising matter appearing in the publications of the Institute if it is going to be a help. We do not need that kind of protection.

Mr. D. McDonald—I do not think it is beneath the dignity of the Association to accept advertisements as long as we give value received. An advertisement of a gas appliance inserted with the report of this Institute should meet the eye of every man it is intended for, and so long as we do not do it as beggars, asking for something and giving nothing in return, we lose no dignity whatever. I believe that the advertising which will accompany these reports will be so valuable that it will not be necessary at all to solicit advertisements. For that reason

I disagree with the position of my friend Forstall, that it is in any way beneath the dignity of the Institute to accept what we will be giving good value for in return.

Mr. Shelton—If some that are here felt that they could speak their real feelings on this matter of advertising, not in regard to a really good proposition but in connection with appeals for advertisements which we all know are made, I think the subject would present itself somewhat clearer here. But we do not dare to say what we hear outside. In my opinion, the Institute will have enough income from its legitimate and proper channels, and it had better do without that additional income than to get it by holding up our friends in the trade.

Mr. A. E. Forstall—I believe Mr. Doherty's motion was not seconded. I will therefore move, Mr. President, that the report be adopted.

A Member—I will second it.

The President—I understand that Mr. Doherty's motion was seconded.

Mr. Cunningham—Mr. President, I only wish to say to the gentlemen that, with regard to the AMERICAN GAS LIGHT JOURNAL, it does not require protection, but it does ask your co-operation.

Mr. Doherty—I do not like to talk merely for the sake of talking on any subject, but I am interested in this matter, and enough so in a way to strongly desire to see the work of the Institute go forward successfully. I know something of how these things work out. In days gone past I have been behind a number of enterprises in association work, especially where publications in which I have been interested were concerned, and I have gone down in my pocket and furnished the means in some cases that those publications required, and the money we received from advertising was always a valuable aid which came to us from many manufacturers. I know a lot of effort was made sometimes to bring in advertisements, but I know of no man who felt that nothing would come of such advertising but who felt at perfect liberty to refuse, and in fact I think there is many a man who sits here in this room to-day who probably refused; but, on the other hand, there were a great many people who took the opportunity to advertise, and who came around and wanted it themselves. We can talk about the dignity of the Institute all we want to. I believe that one of the most dignified and one of the most useful bodies in the entire country is the American Institute of Electrical Engineers, and if you look at any of their publications you will find they contain much advertising matter. It is also the same with the National Electric Light Association, an Association that we can very well study and learn something from their methods. That Association accepts advertising. It is simply a question of whether the man who wants to benefit himself by putting an advertisement in your Proceedings shall be allowed to do so. These books or pamphlets that will be published by the Institute will be read by the gas men of the entire country and will be valuable advertising mediums. If the matter is handled in that way, in my judgment it will enable the Institute to have more funds and to do better and more efficient work.

Dr. Harrop—I do not always agree with Mr. Doherty, but in this matter I do most heartily agree with him. There are two pamphlets in circulation here to-day that I have had to do with. One is the Report of the Board of Revision, relating to the section, "Distribution of Gas." That was published so as to bring a part of the Revision before the Institute, and was published at the expense of Mr. Stone and myself. There is no advertising in it. The other one is a reprint of my papers on gas works chemistry, printed at the expense of the Wisconsin Gas Association; it contains no advertising, but is held for sale. The pamphlet showing the Report of the Board of Revision is free to the members of the Institute. Now it is, of course, a considerable burden to bring out a thing of this kind entirely at individual expense, but the amount of such matter that can be brought out by the Institute is limited only by the amount of its income. It is largely a question of expense, and I think it should be remembered that the advertising which goes into certain of these publications is worth a great deal of money to the advertisers. As Mr. Doherty has said, there are some advertisers who want the space and who think it valuable, and who have felt that they could not afford to be without it. Some advertisements have been solicited, it is true; but I doubt if an advertising contribution has ever been demanded. I believe that the Institute can solicit advertising without degrading its dignity in the least. It can offer the opportunity of advertising in some of its publications even if it does nothing more. It need not ask or plead with any man, or put it in a way that it will have the effect of demanding of any man, any advertising; but it can at least give him the opportunity, and without the least sacrifice, as it seems to me, of its dignity in any respect. I, therefore, move to amend the motion before the house, to read that the Institute shall be allowed to solicit advertising for such of its publications as it thinks fit through the Secretary, and through the Secretary only, and that the advertising be solicited only for such publications as the Secretary, or officers of the Institute, or the Controlling Board shall see fit. [Seconded.]

Mr. Roper—I would like to say from the standpoint of one of the "abused" that this reminds me a good deal of a story that happened to me a few years ago. If you are going to run it on the dignity plan or principle it will be a good deal as it was with the gas company that I am going to speak of. I went to one man to sell him some gas stoves a few years ago. He was connected with a company located in one of our large New England cities. After I had suggested or told him what was being done in the West and other places, and what a help the gas stove was in soliciting the sale of gas, he leaned back in his chair and said, "I hope the day will never come when we are obliged to ask anybody to burn gas." Soon afterwards that concern was selling out, and under a new manager it was selling about 4 times as much gas without the dignity as it did with it.

Mr. Gardiner—I would like to add a word of confirmation of the opinion expressed in the amendment put forward by Mr. Doherty. In the National Electric Light Association we have a desirable amount of income from advertising in the Proceedings, and I have never heard one word of criticism as to any effect upon the dignity of the National Electric Light Association because it accepted advertising for its Proceedings. I think that this American Gas Institute has a very large problem on its hands to do the work it seems to me it should with the present income at its command. I think every source of income that can properly be availed of should be so availed of in order that we may do this work, and be a thoroughly effective Association and one that will stand.

Mr. E. C. Brown—It seems to me proper that I should state my views on this matter. Gentlemen who talk as Mr. Gardiner and others have here have not had an experience of 20 years in running a gas paper; and when he speaks of the advertising to be had in the electrical field I want to say, Mr. President, that there is no comparison between them at all. The gas industry is not to be compared with the electrical industry. It is true, as Mr. Doherty says, that the electrical publications have contained a good deal of advertising, but the general income derived from advertising in the electrical field is at least 10 times what it is in the gas field. The amount of advertising to be obtained in the gas field is comparatively narrow. There are only about 1,100 gas companies in the country, and of that number fully 300 of the larger and more prominent ones are controlled by syndicates, many of whom are served by one purchasing agency. That narrows the field very materially, and gentlemen, I am opposed, as I said before your Committee, to the soliciting of advertising by the American Gas Institute for its publication for that reason.

Mr. Norris—Mr. President, there seem to be two objections to the advertising; one that it is undignified, the other that it is a hold-up on trade interests. So far as the dignity part is concerned, I do not give a hang for such an argument. There is nothing, to my mind, undignified in an association having advertising matter in its publications. Regarding the hold-up, I do not see where it comes in. I do not see where there is any penalty attached to a refusal by anybody in regard to advertising in such publications. I am heartily in favor of allowing the Institute to issue advertisements, if it is so desired.

Mr. D. McDonald—I just want to call attention to the fact that Mr. Doherty's motion is not to the effect that we shall go into the business of soliciting advertising, but, as I understand it, the effect of his motion would be to simply keep off from our records any prohibition that we shall not do so. If we pass his motion it does not necessarily mean that the Institute is to go into the business of soliciting advertising. Mr. Doherty's motion is merely that that section of the report be dropped, and the effect of it will be to leave the matter where it is.

The President—The motion was amended, Mr. McDonald.

Mr. D. McDonald—An amendment was offered, but I did not understand that he accepted it.

Mr. Doherty—I think a motion was made that the report be accepted, and I amended it by asking for its rejection.

The President—It was also amended by Dr. Harrop to that same effect.

Dr. Harrop—I will withdraw that, Mr. President.

The President—That that portion of the report relating to advertising be rejected?

Dr. Harrop—No. If Mr. Doherty's motion prevails it will simply reject the report, and, as I understand it, advertising can then still be solicited if it is found desirable.

The President—Then the motion is on the rejection of that portion of the report. All in favor of the rejection of that part of the report which prohibits the Association from receiving advertising for its publication

will say, "Aye." Contrary minded, "No." The motion is carried.

The Secretary—The next paragraph relates to the assets of the American Gas Institute. I suppose that is not a matter for consideration. The next thing for consideration is the motion made by Mr. Ramsdell, that the Proceedings of this meeting be published by the Secretary as soon after the close of the meeting as possible. [Seconded.]

On motion of Mr. McIlhenny, the clause of the report calling for the publication of the Proceedings of the meeting as soon as possible after adjournment was adopted.

The Secretary—The next paragraph is with reference to the adoption of the papers reported by the Secretary to be read to this Association.

On motion of Mr. Ramsdell the paragraph was adopted.

The Secretary—The American Gas Light Association and the Western Gas Association have been contributors to the Gas Educational Fund. I think the American Association contributed $250 and the Western Association $100. The Board of Control recommends that the American Gas Institute contribute each year the total of the subscription of the American Gas Light Association and the Western Gas Association to the Gas Educational Fund.

Mr. Ramsdell—I think the understanding was to continue the subscription until the term has expired, and I move that that be done. [Seconded and adopted.]

The Secretary—The Board leaves the matter of the selection of the permanent headquarters of the Institute to the members present.

Mr. Doherty moved that the selection of headquarters be left to the incoming officers.

A Member—May I ask what that means? Does that mean permanent headquarters?

Mr. Doherty—Yes; permanent headquarters.

Mr. D. McDonald—Does the passage of this motion give the incoming officers power to select Institute headquarters?

The President—I presume such is the intention. It is moved and seconded that the matter of selecting a permanent headquarters be referred to the incoming officers with power to act.

Mr. D. McDonald—I move to amend to the effect that, before final arrangements are made, they shall report back to the Institute.

A Member—May I ask what is the meaning of the term "Permanent headquarters?"

The President—It is proposed to have the Secretary, I believe, have a permanent office in Chicago, Cleveland, or elsewhere, where the libraries, apparatus, etc., may be kept, and from which the business of the Institute is to be conducted.

Mr. Norcross—What has the Institute got which will require the establishment of such a place?

Mr. Forstall—I may be able to answer Mr. Norcross's question. The Institute, as the effect of the merger, comes into possession of quite a mass of material, including copies of proceedings, libraries and more or less apparatus donated at various times, and it is absolutely necessary that that should be kept in some permanent place and not kept moving around the country. Therefore, it is very desirable and advisable that the Institute decide upon some permanent headquarters which would, at least, continue to be the headquarters for a period of years, or until some occasion arises making it necessary or worth while to change them. Unless you do so, we may change the headquarters every year; for the Secretary is elected every year. Unless something of that kind is done we may change the headquarters of the Institute with the changing of the secretaries from year to year. If we cannot get anybody to take the job, and it was left as it is at present, the things would have to be shifted around the country with each change in the Secretary, and in a short time the things would be destroyed or be used up by freight charges.

Mr. Mitchell—I move as an amendment that New York city be chosen as the place for the permanent headquarters of the Institute. [Seconded.]

Mr. Egner—That would mean that the Secretary of this Association would have to move to and live in New York. I think the first motion was the best—to leave it to the incoming officers. If the amendment is carried, whoever is Secretary will have to live in New York. That is all there is about it. I hope the amendment will be voted down. It will not cost a great deal to move those books and things. I have moved a whole lot more than the Institute has to move a good many times and my effects were never damaged, or anything like it.

Mr. J. Dell—Would it not be proper to have an Assistant Secretary, having him reside at the permanent headquarters? Then the Secretary elected from time to time would not necessarily have to live at the permanent headquarters if he held the place.

The President—No provision is made for an Assistant Secretary. Are there any further remarks? If not, the motion will be on the amendment, that permanent headquarters be established for the Institute in New York city.

Mr. D. McDonald—Are we ready to vote on this question? It does not seem to me that we are. There is no report here of what we are going to keep in New York, or as to where we are to have our permanent headquarters, or what is to be done there. It seems to me that as the matter is before the Institute in very indefinite shape, it is necessary to leave it to the Governing Board for the present, they to report thereon at the next meeting. I do not think we are ready to vote on such an important matter. We cannot vote to move the headquarters to New York without knowing what that involves. Does it mean that every meeting will be held in New York city? It seems to me that we ought to leave that to the Board, or to a competent committee to put in shape in order to take intelligent action.

Mr. Mitchell—It does not matter what we have to keep at the headquarters. New York city is a good place for it, and New York city has plenty of good men to take care of it.

The President—Gentlemen, all in favor of the amendment as stated by Mr. Mitchell, that the permanent headquarters be established in New York city, signify by saying "Aye." Contrary minds by the usual sign. The "Noes" have it, and the amendment is lost. Now, gentlemen, we will put the original motion, that the matter of establishing permanent headquarters be left to the incoming officers with power to act.

Mr. D. McDonald—Just a moment before that motion is put. With power to act for how long? I move to amend, if in order, that the power to act shall only hold good until the next meeting of the Institute.

The President—You can change it at any time. All in favor of the motion as stated will signify by saying "Aye." Contrary minds, "No." The motion is carried, and the matter is left to the incoming officers.

The Secretary—It has been recommended that an extension of 30 days be given to dilatory applicants to send in their applications to become charter members.

Mr. Shelton moved that that be extended to December 1st.

The President—As I remember, when the matter was under discussion before the Board the original motion was that 30 days be adopted. Afterwards I think it was agreed it should be extended to December 1st. Are there any further remarks? If not, all in favor of the amendment offered by Mr. Shelton will signify by saying "Aye." Contrary minds, "No." [Carried.] The original motion is that the matter be extended for 30 days. The vote is now upon the motion as amended, or that the recommendation as amended be accepted. All in favor of the motion as amended say "Aye." Contrary minds signify by the usual sign. [Carried.]

The Secretary—It is recommended that no honorary member be chosen for 2 years, and at no time until after the name of the candidate for honorary membership shall have been before the Board for at least 1 year.

Mr. Mitchell moved it be adopted; motion seconded.

The President—It is regularly moved and seconded that that be adopted. Are there any remarks? All in favor of the motion will say "Aye." Contrary minded, "No." [Carried.]

The Secretary—That is all, Mr. Chairman, with the exception of the reports of the Secretaries of the three Associations that the applicants have been classified as received. I think there were probably a dozen instances in which members applied for active membership who were classified for associate membership. The committee passed on those as their classifications seemed to indicate.

The President—We will now listen to Mr. Paul Doty's report for the committee on the question of dividing the Institute into sections for the different classes of work.

Report from the Committee on Proposed Sections for the American Gas Institute.

Mr. Paul Doty—Mr. President and Gentlemen: I have to present a report of the Committee on Proposed Sections for the American Gas Institute. The Committee consists of Messrs. Doherty, Donald McDonald and myself, and our report was prepared having in mind how to increase the value of our Gas Institute work.

The objects of this Institute are to amalgamate into one body the American Gas Light Association, the Ohio Gas Light Association, and the Western Gas Association, and to facilitate co-operation between the various State and District Associations that now exist, and to secure thereby a more rapid promotion and advancement of scientific and practical knowledge in all matters relating to the construction and man-

agement of gas works in the manufacture, distribution and consumption of gas.

The first object (that of amalgamation) is now an accomplished fact by the vote of the members of the 3 Associations named.

The second object (to facilitate the co-operation between the various State and district Associations) can be accomplished in accordance with Article 49 of the Constitution providing for the affiliation of local associations.

The Board of Directors may, in its discretion, make, with any one or all of the district and State gas associations now existing, or hereafter to be formed, that will agree to thereafter confine its elections to membership to persons directly identified with gas interests within the district or State whose name it bears, to consult with the Institute before undertaking any original work, and to do each year in co-operation with the Institute a certain amount of original work, agreements providing for co-operation between the Institute and such associations. Each and every district or State gas association with which such agreements are entered into shall be entitled to elect one of its members a member of the Board of Directors of the Institute, the member so elected to be in addition to those mentioned in Sec. 21, provided that the number of such associated directors shall never exceed one-third of the total membership of the Board. Should the Board of Directors provide for an Executive Committee, this Committee shall include in its membership one man from each of the affiliated Associations as long as the number of such Associations does not exceed 6. Thereafter, there shall be on the Executive Committee at least 6 men who are members of affiliated associations and who have among them membership in at least 6 such associations.

The third object, to secure a more rapid promotion and advancement of scientific and practical knowledge in all matters relating to the construction and management of gas works, and the manufacture, distribution and consumption of gas, is really the chief object of the Institute, which was born of the desire to accomplish better association work. The framers of the Constitution recognized the complex nature of the gas industry in their recital of the third object. It is evident there are men engaged in construction work, and in the management of gas properties, and in the manufacture, distribution and consumption of gas. It is also recognized that there are men who are associated in pursuits which constitute branches of gas engineering, and are, therefore, qualified to assist in promoting the objects of the Institute. There is, therefore, provision made for active and junior and associate members. It is recognized that it is impossible to consider all matters of importance in so complex an industry in one short annual session. It is also evident that all of the officers and employees of a company cannot be absent at one time in attendance at a convention in a distant city. Your committee, therefore, was appointed to consider the question of sectional divisions for the consideration of special lines of work, and that these sectional divisions will have their own sectional officers and would hold national conventions under the direction of the Institute, and that all members of these sectional divisions shall be members of the Gas Institute. It is proposed that there shall be the following classes for active and junior members:

Class A.—Engineers, managers, superintendents, consulting engineers.

Class B.—Secretaries, treasurers, accountants.

Class C.—Commercial managers, advertisers.

Class D.—Chemists.

Additional Classes can be provided should there be a necessity for including other specialists, such as attorneys for gas companies, heating and ventilating engineers, etc.

The Directors of the Gas Institute shall have power to consolidate any two or more sections temporarily.

If the recommendation of the Committee shall be adopted, that the Institute will be divided into Sections, then the Committee recommends that the Board of Directors be authorized to appoint a member of the Institute to be the first chairman and to take charge of the organization of each of the Sections which the Institute shall finally authorize and to provide for the time and place of the first meeting of each of the Sections.

The Committee makes no recommendation for sectional organization of associate membership. In view, however, of the fact that there exist already well organized associations engaged in work closely related to the gas industry, such as the "Illuminating Engineering Association," the "Natural Gas Association" and the "National Commercial Gas Association," we recommend that the Board of Directors be authorized in its discretion to make with any one or all of the Associations named above, or hereafter to be formed that will agree to consult with the Institute before undertaking any original work relating to the gas industry, and to do in co-operation with the Institute a certain amount of original work, agreements providing for co-operation between the Institute and such associations. Each and every affiliated association with which such agreements are entered into shall be entitled to elect one of its members a member of the Board of Directors of the Institute, governed by the same provisions as now govern Article 49 of the Constitution.

Your Committee submits as a supplement to this report a number of subjects for investigation and report. A number of these subjects can be referred to the chairman of the sections, others can be referred to special committees of the Institute for investigation, while others can be referred to the association which will affiliate with the Institute.

The Committee believes that better Association work will result from the adoption of this plan, and respectfully recommends that your Board of Directors be and they are hereby authorized to do all things necessary to this end. Respectfully submitted by

PAUL DOTY, Chairman.

[To be Continued.]

(Continued from page 761.)

FOURTEENTH ANNUAL MEETING, PACIFIC COAST GAS ASSOCIATION.

HELD IN SAN FRANCISCO, CAL., SEPTEMBER 18, 19 AND 20, 1906.

FIRST DAY—MORNING SESSION.

Discussion on the Paper by Mr. W. B. Cline.

[For the text of the paper, see JOURNAL, Oct. 29, p. 760.]

The President—The paper presented by Mr. Cline is a very interesting one. I would like to hear from Mr. Hamilton, Manager, gas stove department of the San Francisco Gas and Electric Company, on the subject.

Mr. Hamilton—We have tried both systems, and finally went back to the system of the Gas Company selling appliances. However, our test has hardly been long enough to demonstrate whether the other system is a proper one or not.

The Acting President—Did the Gas Company stop selling gas appliances? I thought the Company in San Francisco kept a gas appliance store.

Mr. Britton—That was abandoned July 1, 1906.

Mr. Lowe—I would like to ask Mr. Cline as to their method of handling gas appliances. Until a short time ago, I believe, you controlled the absolute sale of them?

Mr. Cline—Until about a year and a-half ago.

Mr. Lowe—Do you still supervise the same in a general way?

Mr. Cline—Yes, in a general way, merely to see that it is properly handled, and that the prices are reasonable.

Mr. Lowe—What do you call a reasonable price?

Mr. Cline—We merely calculate what would be a reasonable profit, but the result is general in a way, as I spoke in my paper, that every stove dealer in town is boosting the gas appliance business.

Mr. Lowe—To what extent do you now have calls for repair work? Do the dealers call upon you in any way to rectify troubles?

Mr. Cline—No, sir. There are several concerns in town which attend to the repair work almost exclusively. If there is anything wrong with the stove the purchaser will first appeal to the concern from which it was purchased, and they will either attend to it or turn it over to the repair firms. It relieves us of an enormous amount of gratuitous work. The point is that every dealer in town is trying to sell his goods in preference to any other man engaged in the same business.

Mr. Lowe—Do you think a small company would operate with as much success in turning the sales of appliances over to the regular dealers as would a large one?

Mr. Cline—I think if the small company got to the point where gas became the universal fuel it would be the same.

Mr. Lowe—The experience I have had in small towns has been that, try as you may, you could not be very successful in having the dealers take hold of the proposition. My experience with dealers in small towns is there seems to be a general antipathy toward the business.

Mr. Cline—I think that is brought about largely by the fact that the gas companies are, to a large extent, controlling the sale of gas appli-

ances. One of the principal reasons why it is harder in a small town is that the price of gas is higher than in a large place.

Mr. Byerly—If the appliance company, knowing that a stove is not giving satisfaction and refusing to send a man out to repair it, then do you send a man?

Mr. Cline—No, sir. We send out a man to find out what is the fault with the stove or appliance, and he tells the consumer to apply to the gas appliance or repair man. We never touch a stove unless it is some little thing. In Los Angeles I will state that fully 95 per cent. of the consumers use gas for fuel.

Mr. Lowe—In other words, you reach pretty nearly every consumer along your line?

Mr. Cline—About 95 per cent. at least.

Mr. Lowe—Do you mean that 95 per cent. of those who use gas use it for fuel as well as for lighting, or 95 per cent. of the houses along the line?

Mr. Cline—I referred to 95 per cent. of the consumers, but I would state that nearly everyone along the line uses gas, which is very near the same thing.

Mr. Leach—I was particularly pleased when I saw this topic in the prospectus, but even more pleased now because about 2 years ago it seemed to me Mr. Cline's views were the facts in the distance, and while we have not (the time is not ripe in my judgment for us in Oakland) withdrawn entirely from the field of gas appliances, I believe we are working along the exact lines that Mr. Cline is doing, and I can see, from the results we have obtained, that we are progressing properly, and before very long the conditions will exist in Oakland, on the other side of the bay, that will warrant the Gas Company to withdraw entirely from the sale of appliances, and, as Mr. Cline says, save us a great deal of money and expense in the matter of making repairs and in running down complaints. In the matter of cleaning stoves and adjusting them, this certainly should be paid for, but the main thing, as Mr. Cline has emphasized in his paper, is that every dealer in household furnishings and every department store should handle gas appliances. Previously they have been, as Mr. Cline has said, antagonistic to the sale of gas stoves. If a party went in to buy the complete furnishings for a house they would sell them everything they wanted, but when it came to the fuel proposition, if they wanted a gas stove, they would discourage the idea and try to sell them anything else but a gas stove—a gasoline stove, a coal stove, or even an oil stove—explaining they were cheaper and would give just as good satisfaction. We now have in Oakland at least 15 or 20 establishments with full lines of gas appliances; gas stoves from a 1-hole burner to large ranges are on display in all of these different stores, and when persons ask for a gas range they are not shunted, but they are shown the very best samples that the concern can sell, and while we have not made such large sales as Mr. Cline speaks of, at the same time the sale of gas stoves on our side of the bay is very satisfactory. We keep a very close record of the number of gas stoves connected with our lines, also in the various territories, check them up with the number that we sell ourselves, and find we are selling less than 10 per cent. of the stoves put in on the other side of the bay. As I said before, I do not consider the time is ripe for us to withdraw entirely from the sale of gas appliances, but I do believe all that it is necessary for us to do is to set the pace, maintaining a price that will allow the dealer a fair profit, and maintaining a price sufficiently high to protect him and keep up the standard of stoves. This can be done by maintaining a sample room and exhibiting the various designs, and I think the best place for that sample room is at the counter, or as near as possible to the public vestibule where gas consumers make their monthly payment of bills.

Mr. Pearson—It seems to me one particular point that has been overlooked in this matter is the wholesale selling by retail dealers. After the market has been fairly well supplied, and there is not very much more business to be done by them—that is, where the field is occupied and the cream of the business has been taken off by the company. But what are we going to do with the inferior appliances that are put on the market and sold by department stores and dealers, irrespective of price or conditions? I agree with Mr. Cline, as far as the necessity of selling the stoves is concerned, in Los Angeles but I do not agree that it would be so in small towns. I do not think that practice will prove it so. It would be dangerous for a small company in Southern California, at least, where municipal ownership and competition are so rife, to fail to offer to the people the best appliances possible, and to attend to their every want. I think sometimes we lay too much stress upon the fact that we are doing too much gratuitous work. I do not believe that any company is suffering from doing too much of this sort of gratuitous work. If any are, it must be due to the management; the management must need fixing. If a consumer has a complaint which is not changed or altered by reason of the fact that you sold the appliance, the responsibility with the carrier seems to me to remain the same in the end, because the balance side of the ledger is the end you are looking for.

The Acting President—Mr. Cline, as I understand you say that only 5 per cent. of possible consumers in Los Angeles yet remain to supply stoves to?

Mr. Cline—I did not mean that 85 per cent. of the inhabitants were consumers of gas, but my remarks referred to 95 per cent. of the gas consumers already on the books were using fuel gas.

Mr. Jones—It seemed to me, as I listened to the paper, that Mr. Cline did not intend to convey the idea that the occupancy of the field was complete, but that he was trying to demonstrate the necessity of gas stoves, and that it was the best possible means of cooking. I think he means you must first supply the consumers with the knowledge of the proper use and economy of gas.

Mr. Cline—Yes, that is the result of 17 years' efforts, Mr. Jones, and we are at last arriving at the point where it may be realized.

Mr. Clement—I agree with Mr. Cline. He has reached a place where it is no longer necessary for the Company to do this work of installing these stoves—it is no longer necessary for them to transact this part of the business. He gives the work, the labor, and the selling of these stoves to outside parties, and by which means he gains their friendship, which is a great advantage to the company. In the small towns some years ago the gas manager was confronted with the electric light, which took away, in some instances, one-half or two thirds of his profits. "Now, what am I going to do with my gas works?" he asks. Then the question came up that he must sell gas for some other purpose than illumination. Finally things developed as they are at present, and he had to go into the field and sell gas for fuel. Ordinary merchants in the country towns who use coal or wood stoves, or any other kind of a stove, sell the article that the customer calls for, and the article that one can make the most profit on. Now, you would not blame him for that—he has no interest in the gas company; but, on the other hand, the gas company must sell its gas through the medium of gas appliances, principally the gas range. I have, in my management of small gas companies, offered to furnish hardware store dealers with the stoves at wholesale cost price, and I have even gone so far as to install the stove in the same way that I would if I had made the sale myself at the price named. Well, how much money was there in it for me? Nothing of any consequence. I think that selling gas appliances in a large town is one thing, but in a small town the manager of the gas company has to be very close to his people in order to sell his gas.

Mr. Britton—I would like to go back to Mr. Clement's idea that the gas works without the sale of gas for fuel would be of no value. The facts are that even in small towns where electric light is sold at flat rates, the amount of consumption for illuminating purposes is constantly growing, and in the larger towns it is growing in large proportions. We are selling at all of our towns more gas for illuminating purposes than ever before, and with the advent of all of the improved appliances for illumination, the field is just as large and just as much open for the gas dealer in illumination as for fuel.

Mr. Clement—I only intended to say that when electricity first came to be an opponent of gas. I did not speak of the present time.

Mr. Britton—Yes; you are right—at that time. I would like to ask Mr. Cline if he encourages the dealers in stoves by doing the advertising on behalf of the Company?

Mr. Cline—Yes; we continually advertise in the daily papers—just advertising gas as a fuel.

Mr. Britton—And do you employ canvassers also?

Mr. Cline—Yes, some; but it is hardly necessary to recommend gas to the people of Los Angeles.

Mr. Britton—I was very much struck with Mr. Cline's idea of establishing firms that will take care of the repair work. I think that is the most costly part of the distribution of gas for fuel. I will supplement what Mr. Hamilton has said about our experience in San Francisco. Shortly after the 18th of April a company was organized and operated for a matter of 60 days, so that the gas company was divorced from all connection with the sale of gas appliances. But the field at the present time in this city is in a peculiar condition, and it was thought advisable to again take hold of the sale of appliances, and we are now doing our own work in that particular. How long it will last will be a matter for the future; but in any event, we are doing this in San Francisco. "The Gas and Appliance Department" is an entity of it own, it is entirely separate and apart in jurisdictional matters and executive matters from

the office. It is a department store of its own that will be held directly responsible for results, and cannot be handicapped by any other department or by any amount of red tape. It is very much like a separate concern, and we do encourage here in San Francisco the sale of appliances by all the dealers, as was done prior to April 18th. Mr. Leach made the astounding statement (it does seem astounding to me) that but about 10 per cent. of the gas appliances sold in Oakland are sold by the company. It does look like the dividing line is being very rapidly reached. Of course, it seems to me we can control the kind and quality of the articles to be sold, because the dealer knows very well that the gas company, in order to protect itself, will at all times demand an appliance which will give satisfaction, and if these are not sold, it is in the power of the company to so reduce the price to make it impractical for anybody else to sell them. I am strongly of the opinion that, in the smaller companies, a company having an output of not less than 200,000 per day, the best results can be obtained by taking charge of the sale of its own appliances, and by that gratuitous attention to complaints it does make friends. In the large companies there is a limit reached, financially and otherwise, in gratuitous service, because of the mass of people, numbering in Los Angeles approximately 500,000 (I am giving you credit for all you are entitled to), and in San Francisco with a population at the present time of 550,000. The enormous amount of gratuitous work in a town of this size would simply swamp you, while in a small town it is to the interest of the company and to the local manager to do this kind of work, for he is making friends for the the company. There is a difference between a large and a small company. I have preached that for the last 14 years, that in our discussions here a man that has control of a large concern cannot give advice from his standpoint to the little fellow who only has a small concern, because generally the rules which apply to one will not apply to the other.

Mr. Cline—If the small company could get to the point where gas would be a universal fuel, and the dealer could not use anything else, you are in the same position as the big company then.

Mr. Lowe—I would like to ask Mr. Cline and Mr. Leach about what percentage of profit is charged by the dealers in Los Angeles. Mr. Cline stated that they charged a fair profit.

Mr. Cline—I should say from 20 to 25 per cent.

Mr. Leach—Perhaps 25 to 30 per cent.

Mr. Lowe—Is that about the amount of profit a dealer would get in selling a coal stove?

Mr. Leach—I think so. Perhaps on some of his coal appliances he may get a little more than that. One thing that is working to our advantage in the sale of gas appliances by the dealer is that practically all the new houses are being piped for fuel gas. The dealer does not have to run the pipes to the kitchen in order to supply the gas. Most of the plumbers' plans now show a 1-inch pipe directly to the kitchen; consequently there is very little expense to the dealer in supplying the stove—not more than $1.15, but when he wants to set up a coal stove he has the water connection to figure on.

The Acting President—Gentlemen, you have heard a very interesting discussion on this subject. It seems to me the only way we can get rid of the gas stove department is to make everyone use gas for fuel.

Mr. Lowe—One decided advantage of throwing the burden on the other fellow, is we miss the junk pile. Mr. Britton is the only man I know of who has solved the question of the "junk pile."

Appointing Special Committees.

The Acting President here appointed the following Committees:

Committee on Gas Engineers' Degree.—L. P. Lowe, E. C. Jones, John A. Britton.

Committee on Permanent Home.—W. F. Boardman, E. C. Jones, John A. Britton.

Advisory Board.—W. B. Cline, John A. Britton, E. C. Jones.

Committee on Obituary.—T. R. Parker, John Clements.

Committee on Awarding Medal for the Best Paper Presented.—R. L. Sterling, F. E. Fitzpatrick, T. R. Parker.

Meeting adjourned until 2 P.M.

First Day—Afternoon Session.

The meeting was called to order at 2:40 P.M.

The first paper was that by Mr. F. B. Shelton, of Philadelphia, on

THE AMERICAN GAS INSTITUTE,

which paper was read by the Secretary in the absence of the author.

[For the text of the Shelton paper see JOURNAL, Sept. 24th, p. 535.]

Discussion.

The Secretary—I will say to the members that this was an idea started in the minds of some of the Eastern gas men— notably Mr. Doherty, of Denver, and Mr. Shelton, of Philadelphia, to incorporate all of the Associations in the United States into one general Association; that is, that the parent Association being the head, and the others being the subordinates. It has gone so far at the present time as to incorporate the Ohio, the American and the Western Associations. Mr. Doherty was here a year ago, and addressed us on the question of the Pacific Coast Gas Association joining the Gas Institute, and the Association appointed a committee, consisting of Mr. Jno. Martin and myself, to represent the Pacific Coast Gas Association at a meeting held in New York. Mr. Martin was the only one able to be present, and no action was taken at that time so far as the Pacific Coast Gas Association was concerned. Mr. Shelton's paper will explain what further has been done.

The Acting President—I would like to ask if a member of the American Gas Light Association or of the Ohio Gas Association would go into the Gas Institute automatically, as a member?

Mr. Britton—No; a member in good standing in any Association that went into the Institute would become a member of the Institute without an initiation fee. You can become a charter member simply by application. When an Association goes into the Institute the old Association goes entirely out of existence. I do not know that I can add anything to Mr. Shelton's paper any more than to suggest that possibly it would be advisable to discuss at some time during this session the advisability of the Association becoming a member of that Institute under the terms he mentions, of their control of the territory outside of our immediate territory, which would mean the relinquishment of our members who are not residents or inhabitants of the Pacific States territory, which, in our original constitution, were defined as Washington, Oregon, California, Arizona, New Mexico and Utah, and that we would not take up any original work without the consent of that Association, and would assist in the work. The committee obviously cannot do anything now, but at the meeting in October of the Association undoubtedly such questions will arise and be settled. Mr. Miller advised me last night that he intended to be present at that meeting, and I suggest that he be appointed as a committee of one to represent the Pacific Coast Gas Association.

On motion Mr. Miller was appointed as a representative of the Association to attend the meeting of the Institute to be held in Chicago in October of this year.

Mr. Berkley—I would like to ask whether we would retain the identity of the Association and not be merged, as was the Western Gas Association?

Mr. Britton—No; there would be no merging so far as State Associations are concerned.

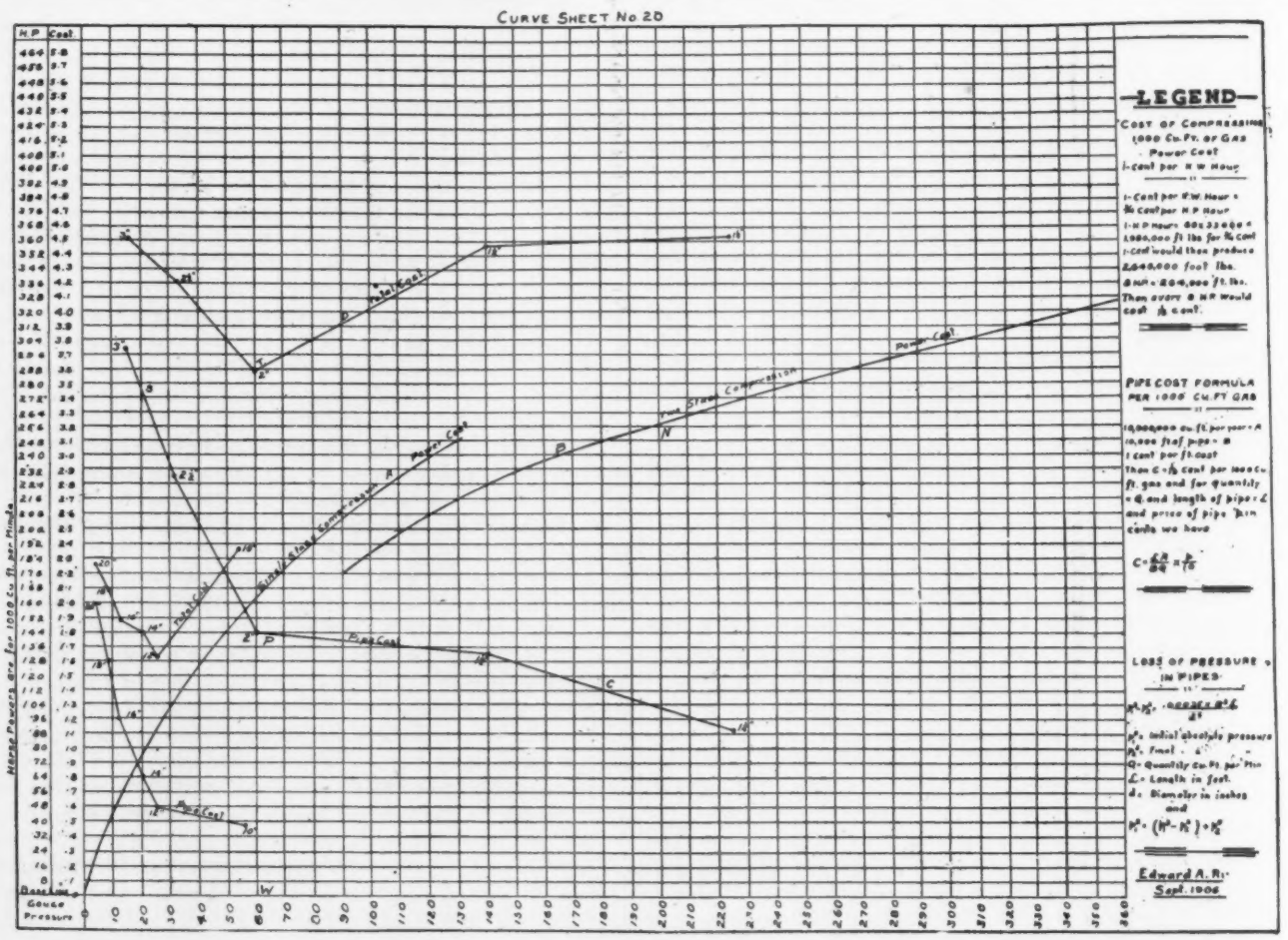
The Acting President—We will now listen to the paper by Mr. E. A. Rix, on

SOME ECONOMIES IN HIGH PRESSURE GAS TRANSMISSION.

Last year I had the pleasure of presenting for your consideration a paper entitled "The Compression and Transmission of Illuminating Gas," in which the general theory of the subject was discussed, and methods shown for calculating the specific heats of various gas mixtures, the heat developed by compression and the power required. Also various losses in pressure and power in pushing gas through pipes, and some coefficients for all this data, so that one could approximate, with some degree of certainty, the various elements of a practical plant. The length of the paper did not permit of bringing it to such a closing that those not caring for the theoretical part could readily solve some everyday problems pertaining to a high pressure gas transmission. It is, therefore, the intent of this paper to briefly supply this deficiency, and at the same time to introduce the element of cost of compressing gas and a method for determining the proper size of pipes so that the gas engineer may be able to readily and easily arrive at the essential elements in his problem.

Curve sheet No. 20 has been constructed for this purpose and conditions as general as possible have been assumed, and in order that it may be easy for anyone to construct a similar curve sheet for other conditions, the method of making it may well be explained. Inasmuch as gas is generally sold and handled by the 1,000 cubic feet, it seems proper to make that the basis for quantity, and 1 cent per kilowatt hour seems a natural base from which to calculate the cost of power, and should anyone have steam power or power other than electric, it is a simple matter to convert it to kilowatt hours.

If a kilowatt hour costs 1 cent, a horse power will cost practically ¾ o


CURVE SHEET No 20
H.P Cost
Horse Powers are for 1000 Cu. ft. per Minute
Gauge Pressure
—LEGEND—
Cost of Compressing 1000 Cu. Ft. of Gas
Power Cost
1-cent per H.W Hour
1-cent per H.W Hour =
¾ cent per H.P Hour
1-H.P hours 60 x 33,000 =
1,980,000 ft lbs for ¾ cent
1-cent would then produce
2,640,000 foot lbs.
8 H.P = 264,000 ft. lbs.
Then every 8 H.P would
cost 1/10 cent.
PIPE COST FORMULA
PER 1000 CU. FT GAS
10,000,000 cu. ft. per year = A
10,000 feet pipe = B
1 cent per ft. cost
Then C = 1/10 cent per 1000 cu.
ft. gas and for quantity
= Q and length of pipe = L
and price of pipe "n"
cents we have
LOSS OF PRESSURE
IN PIPES
Edward A. R.
Sept. 1906
Single Stage Compression
Power Cost
Two Stage Compression
Pipe Cost

cent; 1-horse power hour = 60 × 33,000, or 1,980,000 foot pounds for ¾ cent, 1 cent would, therefore, produce $\frac{1,980,000}{.75} = 264,000$ foot-pounds.

Eight-horse power equals 264,000 foot-pounds, consequently every 8-horse power will cost $\frac{1}{10}$ of a cent per minute. This gives us the basis for our curve, for if we lay out our sheet in equal divisions of any size and call each one along the vertical line 8-horse power, we can also make each division represent $\frac{1}{10}$ of a cent., and each horizontal division we can conveniently call 10 pounds.

If you will now refer to Table 19, the last table which I read at our last meeting, it will be possible to construct the curve, remembering that the table is constructed for 100 cubic feet per minute, the horse powers therein contained must be multiplied by 10 for the 1,000 feet capacity we are now considering.

Take, for example, 50 pounds gauge pressure; the brake horse power required for 100 cubic feet is 14.56, and for 1,000 would be 145.6. Where the vertical line indicating 50 pounds meets the horizontal line drawn from 145-horse power will be a point on the curve. Similarly other points can be made, and, joining the points together, we shall have a cost and power curve combined which will be very useful in our calculation.

I have constructed two of these curves, A and B. A is the curve of single stage compression and B for 2-stage compression. Single stage is rarely used beyond 100 pounds pressure, nor 2-stage below 90 pounds pressure. You will note quite a difference in favor of 2-stage compression. For example, at 100 pounds pressure it costs 2.35 cents per 1,000 for 2-stage and 2.75 cents for single stage. In even a small plant using 50,000,000 feet per year, the difference would be $200 per annum, which is well worth saving.

The 2-stage curve may be readily constructed from the single-stage curve by remembering that the intermediate absolute pressure between the stages is a mean proportional between the initial and final absolute pressures, and, inasmuch as it takes the same power for each stage, if we double the power required for the first stage we shall have the desired results; thus, the intermediate gauge pressure for 200 pounds pressure will be 41 pounds. We note from the single-stage curve that 41 pounds require 128-horse power, consequently twice this is 256-horse power, which, laid out on our curve sheet on the 200-pound vertical line, will give us the point N on the 2-stage curve, and so on for other points to complete the curve.

It must be understood that the horse powers are for 1,000 cubic feet per minute, and the cost will be per 1,000, and if you wish to eliminate the element of time just multiply the horse power by 33,000 and the result will be the foot-pounds to compress 1,000 cubic feet of gas, and independent of time.

If power costs more or less than 1 cent per kilowatt hour, or the quantity to be compressed is greater or less than 1,000 cubic feet per minute, the results may be read from the curve by simply using a corresponding proportion. For example: The curve shows that 1,000 cubic feet can be compressed to 20 pounds gauge pressure at the cost of 1 cent; it follows, therefore, that 2,000 cubic feet can be compressed to 20 pounds for 2 cents, or if power costs 2 cents per kilowatt hour instead of 1 cent, then only one-half the quantity can be compressed for 1 cent, or double the quantity if power cost but ½ cent a kilowatt hour. This method of proportion, however, does not apply to the matter of pressure, for you will note that while a cost of 1 cent gives 20 pounds pressure, a cost of 2 cents gives 58 pounds pressure, and a cost of ½ a cent gives only 8 pounds pressure. In other words, it costs just as much to compress gas from 0 to 8 pounds as it does from 8 to 20 pounds, and just as much to compress from 0 to 20 pounds as from 20 to 58 pounds. It would be well right here to consider this fact, for it has a great bearing on high pressure transmission.

If it was found, for example, that it was costing 1 cent per 1,000 to deliver gas through a certain pipe at 20 pounds pressure, and it became necessary to double the pressure in order to supply an increased demand, the gas company might consider it inadvisable because it might double the cost. Consulting the curve, it will be seen that the cost for compressing at 40 pounds pressure is only 1.6 cents per 1,000 cubic feet instead of 2 cents, as may be imagined, and this fact might justify the increased pressure, and the higher the pressure the more the seeming disproportion.

From the curve take a geometrical progression of gauge pressure, 5-10-20-40-80-160-320, and we note the corresponding costs of compression for 1,000 cubic feet to be, in cents, .3-.575-1.00-1.6.-2.4-3.-3.9; in other words, while the pressure from 5 to 320 has increased 64 times, the cost of compression has increased but 13 times.

It must not, however, be hastily inferred that, because of this decreasing power ratio, it is economical to compress at high pressures, because it may not be so, and depends upon the amount of gas to be pumped; for while the rate per 1,000 may be small and make no ma-

terial difference where a small quantity is pumped, with a large quantity the total amount of the yearly cost of pumping may exceed so materially the interest and depreciation on a larger pipe using a lower pressure that the latter installation will be deemed preferable.

The question of whether a large pipe and small pressure, or a small pipe and high pressure, shall be used is simply a matter of equating the relative costs of pumping, together with the interest and depreciation on the plant, and with the curve given herewith it may be easily determined, and it is to show how to make this determination quite accurately and simply that I have written this paper.

It seemed to me that the cost of attendance, buildings, laying out pipe, etc., for any one problem may be neglected, for while it is an item of cost, it will be practically the same for whatever pipe you may select. We can then make our comparison, using the market cost of pipe and the cost of power only, to which may be added the other costs after the size of the pipe is determined, in order to give the total cost per 1,000 for handling the gas.

The power and cost curve, as constructed, can be called "Standard" and white prints made from it, and upon these white prints the pipe curves laid out, as will be shown, and this same white print can be used in all cases. Let us then take two examples, one for small quantity and one for large quantity, and before starting at it let us make a general standard formula, which will simplify many of the calculations.

No plant will pump less than 10,000,000 cubic feet per year, which is about 1,200 per hour, or at a less distance than 10,000 feet, consequently take for a basis:

10,000,000 feet per year = a.
10,000 feet of pipe = b.
1 cent per foot cost of pipe.
10 per cent. per annum interest and depreciation on pipe.

Then equating these quantities we will find that the pipe cost C for 1,000 cubic feet of gas will be $\frac{1}{10}$ of a cent. For any other quantity Q, and length of pipe L, and price of pipe P, we shall have:

$$\text{Pipe cost per 1,000 } C = \frac{La}{bQ} \times \frac{P}{10}$$

Example 1.—50,000,000 cubic feet per year, or 6,000 per hour, 50,000 feet of pipe, and power to cost $\frac{1}{2}$ cent per kilowatt hour, substituting in our formula:

$$C = \frac{La}{bQ} \times \frac{P}{10} \text{ we have } C = \frac{50{,}000 \times 10{,}000{,}000}{10{,}000 \times 50{,}000{,}000} \times \frac{P}{10} = \frac{P}{10}$$

That is to say, that whatever size pipe we select the pipe cost per 1,000 cubic feet of gas will be $\frac{1}{10}$ the market cost of pipe per foot. Taking the market prices of to-day, then if we should use:

1¼	pipe,	cost per	1,000	cubic feet,	equals..... .559
1½	"	"	"	"	..... .67
2	"	"	"	"	..... .894
2½	"	"	"	"	..... 1.429
3	"	"	"	"	..... 1.875

Having thus blocked out the matter of pipe, we must find what pressure it is necessary to use to pump the gas through these various sized pipes, assuming always that the terminal pressure shall be 1 pound gauge. You will remember that we developed a formula in my paper read last year, which may be used with accuracy.

$$P_1^2 - P_2^2 = \frac{.00035 \times Q^2 L}{d^5} \text{ where } P_1^2 - P_2^2$$

is the difference between the squares of the initial and final absolute pressures.

Q is the quantity of gas in cubic feet per minute.
L is the length of pipe in feet.
D is the pipe diameter in inches.

Substituting in this equation the elements in our problem, we have:

$$P_1^2 - P_2^2 = \frac{35 \times 100 \times 100 \times 50{,}000}{100{,}000 \times d} \text{ or } P_1^2 - P_2^2 = \frac{175{,}000}{d^5}$$

Then $P_1^2 - P_2^2$ equals for

1¼ pipe.....	57,370
1½ pipe.....	23,000
2 pipe.....	5,500
2½ pipe.....	1,800
3 pipe.....	700

P_2 being our final pressure, 1 pound, or 15.7 pounds absolute, makes P_2^2=246, and remembering that $P_1^2 - P_2^2 = (P_1^2 - P_2^2) + P_2^2$, we have

1¼	pipe	P_1^2	absolute	=	57,616	then P_1	gauge	= 225 pounds.
1½	"	"	"	=	23,246	"	"	= 140 "
2	"	"	"	=	5,746	"	"	= 61 "
2½	"	"	"	=	2,046	"	"	= 31 "
3	"	"	"	=	946	"	"	= 16 "

Now we are ready to put all this on our curve sheet in order that we may have a graphic representation of the situation. The power cost curve is on a basis of 1 cent per kilowatt hour. If, therefore, we plot any other costs on this standard sheet, they must be increased or diminished by the ratio the actual power cost bears to the standard power cost of 1 cent per kilowatt. Our problem calls for a power cost of ½ cent per kilowatt hour, consequently we must plot in our pipe costs at double their real amount, for the standard power cost curve is double the cost stated in our problem. Take, then, the 2-inch pipe. We have found the pipe cost to be .894, which multiplied by 2 equals 1.788, and the initial pressure required is 61 pounds. If then we lay off the point P on the 61 pounds pressure ordinate and opposite the cost line 1.788, or 1.8, we shall have the 2-inch pipe established, and similarly we can establish the other points, and joining them by lines we have a pipe cost curve "S. C.," which shows the cost of pipe per 1,000 cubic feet of gas for all sizes from 1¼ to 3-inch. It is evident that the total cost of pumping the gas is the pipe cost plus the power cost, consequently if we add the pipe cost curve to the power cost curve we shall have a curve of total cost. Take the 2-inch pipe once more, and with dividers measure off the distance W. P., the cost of the pipe line, and add it to the line W. Y., which is the power cost, and we have the point T. as the result of the addition. Do the same for the other sizes of pipe, join these points by lines, and we have the curve D. F. as the final result, showing the combined power and pipe cost per 1,000 cubic feet of gas for all the sizes of pipe under consideration.

It is evident at a glance that the 2-inch pipe shows the least cost, consequently the solution of our problem is 2-inch pipe at 60-pound initial pressure. Total cost per 1,000 3.6 cents on a basis of 1 cent per kilowatt hour, but as our power costs ½ a cent per kilowatt hour, the total cost is 1.8 cents per 1,000 cubic feet of gas.

The graphical method is very satisfactory, for one can see at a glance the relations between the various elements, for example: You will note that it cost practically the same to pump this gas through a 1¼-inch pipe at 225 pounds pressure or a 1½-inch pipe at 140 pounds pressure or the 3-inch pipe at 16 pounds pressure, which is interesting.

Problem Two.—Take 5,000 cubic feet per minute, 3,000,000 per hour or 2,500,000,000 per year through the same length pipe as in our former problem, and at the same power cost per kilowatt hour. The pipe being the same length and the quantity 50 times greater. We will have $\frac{P}{500}$ for pipe cost per 1,000 where we had $\frac{P}{10}$ formerly, and taking pipe casing prices up to 12 inches, which was the largest I could get, and assuming them above that size simply for illustration, we find the following prices per 1,000 feet of gas for these pipes:

Diameter.	Cost Per 1,000 Cubic Feet Gas.
10-inch equals.....	.25 cent.
12- " "	.30 "
14- " "	.40 "
16- " "	.60 "
18- " "	.80 "
20- " "	1.00 "

and the respective pressures necessary to force the gas through these pipes to be:

10-inch	equals	53	pounds.		16-inch	equals	12	pounds.
12- "	"	26	"		18- "	"	8	"
14- "	"	20	"		20- "	"	4	"

Multiply the pipe costs by 2 and transferring those quantities to our curve sheet, precisely as we did in the other problem, we have a pipe curve *E*, showing the pipe cost per 1,000 cubic feet, and adding this to the power curve, we have the final result in the curve *F*, which shows this rather surprising fact, that the 12-inch pipe is the best, and that it will carry this gas at 26 pounds pressure, and at a cost of 8-tenths of a cent per 1,000 for power and pipe.

The curve shows also that the gas can be put through the 10-inch pipe at 53 pounds pressure at the same cost as through the 20-inch pipe at 4 pounds pressure. I believe this graphical method will be of service to you, particularly as these curve sheets can be filed away and always used for quick reference, for the eye can take in the whole rel-

ative situation at a glance. I believe this method of handling the subject removes it from the realm of speculation, and makes an orderly comparison of power and pipes possible, to the end that an adequate selection can be made.

Discussion.

The Acting President—Gentlemen, you have heard a very interesting paper. I would like to hear from Mr. Berkley. I think he can give us some points on high pressure, for he has done quite a little of it in Los Angeles.

Mr. Berkley—In Los Angeles the maximum pressure is, I think, 40 pounds. The cost, including interest and depreciation upon the compressors and motors, is 1¼ cents per kilowatt hour, including wages, but not including interest and depreciation on pipe line. It is quite a large plant, 425,000 cubic feet an hour.

Mr. Jones—I would like to ask Mr. Rix a question covering his last curve. Suppose you have a 12-inch high pressure steel tube carrying, say, 8,000,000 feet per day of 24 hours at a pressure of 26 pounds, which is the economic pressure for that amount? If you were to double the amount of gas to be forced through that tubing, would you recommend the increase of pressure in it or the laying of another larger pipe?

Mr. Rix—Without going into the matter very carefully, I should say right away I would lay another pipe, because your quantity of gas to be pumped is so large that the number of thousands multiplied by its cost would be very much in excess of the interest or depreciation of the new pipe. As you increase the number of thousand, you increase the expense very materially.

Mr. Lowe—As I understand it Mr. Rix's paper is merely supplementary to the one read last year.

Mr. Rix—Yes; the finishing touch.

Mr. Lowe—Then Mr. Miller's question might better be answered by the information you gave us last year?

Mr. Rix—Yes, sir.

Mr. Lowe—Gentlemen, the paper presented by Mr. Rix last year, plus this supplement, is worth putting in a pamphlet form. If you have to hunt through all the files of the "Association Proceedings," it is a little difficult to trace it out. I think we can well afford to do this, inasmuch as he has given us this supplement, which is extremely valuable; I think it makes it doubly advisable. I will move that Mr. Rix's paper of last year, and that of this year, be compiled and printed in pamphlet form and distributed to the members of the Association. [Carried.] I do not want to stop the discussion on this paper. As I said before, it is extremely interesting. Mr. Rix's work is remarkable, for it is entirely new—it is really pioneering work in the illuminating gas industry. The natural gas men know more about these things than we do, but they do not tell us. Sometimes we find they do not know as much as we think they do, and it is doubly valuable for that reason. I am sure Mr. Rix would be glad to answer any questions that may be asked. Some questions must arise in the minds of everyone present.

Mr. Weber—Do I understand Mr. Rix to say that the first and second state of compression requires 2 separate compressors; 1 compressing to 20 pounds and another from 20 to 40, and so on?

Mr. Rix—It is the same machine and known as a 2-stage compressor. You pump the gas up to you say 30 pounds pressure in the first compression, then cool the gas to its normal temperature, taking it into the second cylinder and compressing it up to your final pressure. This is more economical, about 15 to 20 per cent. in the cost of compression, and then you can eliminate the high temperature in the compression, which might be detrimental to your gas.

Mr. Weber—Then you would recommend a 2-stage compression above 90 pounds?

Mr. Rix—Yes; it would be almost criminal to use a single-stage over 90 pounds.

Mr. Lowe—Will you kindly tell me why not at 60 pounds? It is my understanding of the matter that double-staging really begins at 60 pounds pressure, and why do you recommend 90 pounds for the first compression?

Mr. Rix—I did not. I am speaking commercially. It would be difficult to get anyone to pay for 2-stage compression at 60 pounds; that is, the question of capital investment enters into it. Really, the machine is cheaper. It can be supplied for practically the same price, but in some way or other the minute you mention 2-stage compression to a purchaser he immediately consults his pocketbook and thinks that he wants a single-stage compression. The man who operates it will want a dollar a day more wages, and it is difficult to sell a compressor to a man of the 2-stage kind for a commpreesion less than 90 pounds.

Mr. Lowe—The repair item on a double stage machine must be greater?

Mr. Rix—No, it is less; and one thing I want to call your attention to. Say, for instance, a single stage compressor, pumping up to 90 pounds, has a thrust on its piston of 90 pounds per square inch, that goes back to the bearings, back to the crank pins, they would have to be constructed according to that pressure, and there is the friction against the bearings. Now, take it at 2-stage—the initial pressure on a 2-stage machine at 90 pounds is 23 pounds. You have a compressor working at 23 pounds and the other was working at 90 pounds. Now, the pressure against the pins is only 23 pounds, against 90 pounds in the single-stage machine, so that you are operating with less pressure. The machine can be lighter, the lubrication is better, and it will last infinitely longer—everything is reduced in that proportion.

Mr. Lowe—Say in a machine of 10,000 cubic feet per hour, pumped to a maximum of 85 pounds, would you recommend the purchase of a double-stage compressor, taking into consideration the added cost of maintenance of the single-stage machine.

Mr. Rix—I would.

Mr. Lowe—What is the relative cost of a machine of that description? In other words, how does the cost of a single-stage and double stage of the same capacity compare?

Mr. Rix—A 10,000 cubic feet per hour machine would require about a 12-inch compressor cylinder. I think the ordinary single-stage compressor is worth $650 and the double-stage $850 or $900.

Mr. V. E. Britton—I would like to ask if the pressure on the 2-stage compressor is the same for 90 pounds on the second stage, or is it at 90 pounds?

Mr. Rix—It is just between the two—that is, the active pressure against the working parts; but you must remember that the second cylinder is smaller than the first by just the relation of these pressures. For instance, if a 12-inch machine, the second cylinder would only be about one-eighth, or something like that, so that the total amount of pressure on the pins would be the same on each side.

Mr. Lowe—I will say, before Mr. Jones reads his paper, that some years ago we made it a rule in the Association not to offer a vote of thanks for papers, but it seems to me, as was done last year, the rule should be set aside in the case of Mr. Rix. He has gone to a great deal of trouble to prepare this most valuable paper, and I move that a vote of thanks be given him. [Carried.]

(To be Continued.)

[Prepared for the JOURNAL, by "R."]

Concerning Arc and Incandescent Lights.

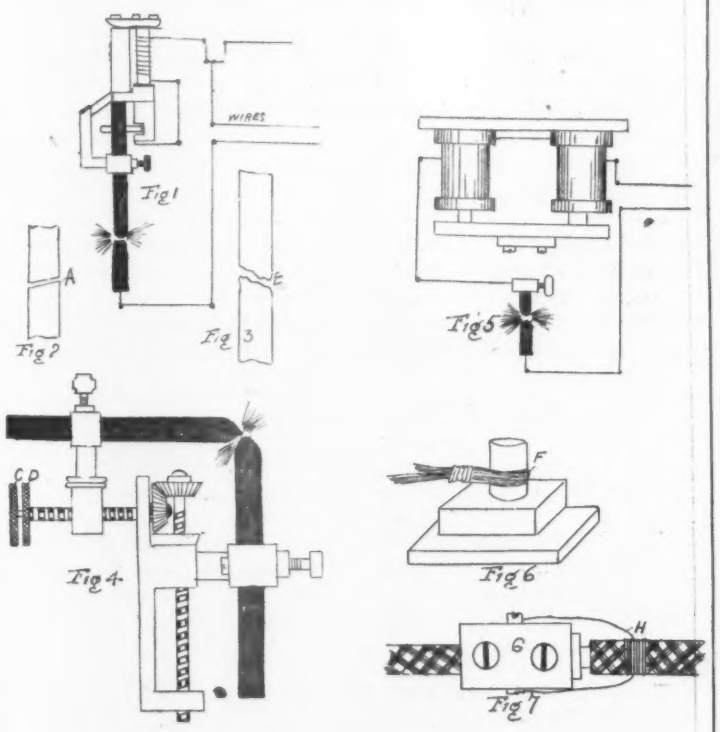
In recent years gas men have had a great deal to do with arc and incandescent electric lamps, for often gas lights and electrical lights are used in combination. While the average electrical arc and incandescent light man does not take very much interest in gas devices, gas men, as a rule, make a study of electrical lighting, and the reason for this is very apparent. Numerous stores and houses depend upon more than one system of light. Where you see the modern forms of electrical lights introduced in public buildings, amusement places, hotels and shops, you will often see a reserve system of gas lighting—in the event of the failure of the arc or incandescent lighting the gas fixture is ready to use. Therefore, gas men are often called upon to attend to the electrical lighting plant of the building. In the annexed cuts are exhibited some views of essential points relative to the installation and care of arc and incandescent lamps. The incandescent light consumes but little current through the thin carbon wire of high resistance, as is well known. This light is used to a very great extent even in large establishments. The carbon wire is inclosed in a glass globe, the globe acting as a tank in which a vacuum may be created. The air is exhausted in the glass bulb and safety is assured when ignition occurs, for if any of the oxygen were left inside the glass globe the hot carbon inside would make a combination that would burn up the filament.

When the gases are exhausted from the inside of the bulb the only loss in power is by radiation, which does not amount to very much. Two platinum wires carry the current to the carbon filament. A potent point is to get a steady current, but unvarying voltage cannot be easily found. Electrical engineers are making rapid strides, however, and each year we find it easier to get an effective light with either the incandescent or the arc lights.

The arc light system is exceedingly valuable for exterior service, or in large halls, and the system is often attached to the weighty gas fix-

tures of the place. I have seen arc light devices arranged in good form along original gas lines, thereby retaining the gas plant for use at a moment's notice. In the arc light, a part of the pencil or carbon is heated to an intense temperature by the passage of considerable current through the same. The two points of the carbons meet at a juncture as at *A* in Fig. 1, where a temperature of about 7,000° F. is created. While from 3 to 4 watts per candle power are registered for the common incandescent lamp, a current of 10 amperes at 45 watts produces 2,000-candle power in the ingenious arc lamp. Of course, there are various troubles with the lamps, such as defective carbons, cross wires, flickering lights, etc., to contend with. Usually the lamps are supported at a height from the ground or floor level, and stageing or other apparatus is needed in order to gain access to the same. The arc light dazzles, and many object to it on that account.

Gas men can tell of many instances in which both incandescent and arc lamps have been discarded after trial, and gas is used again. In the alternating current there is a buzzing sound sent out from the arc light to which many people object. High prices on electrical bills have also caused people to return to gas oftentimes. In one instance the electric light company sent a bill to a party for a month's usage of electrical current after the switch had been opened and the current completely cut off. Hence there are instances in which gas cuts considerable figure even in the world of electrical lighting. Gas men seek to cater to the demands of patrons. In one place where the dazzle of



the white light was objected to, the gas man put in inclosed globes which softened the light.

As a rule arc lights are furnished with the necessary automatic device for regulating the carbons as the latter burn off. Gas men often run across old-style lamps with exceedingly complicated mechanical attachments for governing the movements of the shortening carbons. These devices clog and bother, when dusty or gummed. The parts need overhauling and lubricating at proper intervals. In the more modern lamps the operating mechanism is composed of a magnet which grows weaker as the arc gets larger. At a certain point it gets weak enough to release a clutch that allows the carbons to come closer together, but before the carbon can fall completely, the current through the lamp alters, the magnet becomes strengthened and the motion of the carbons is checked.

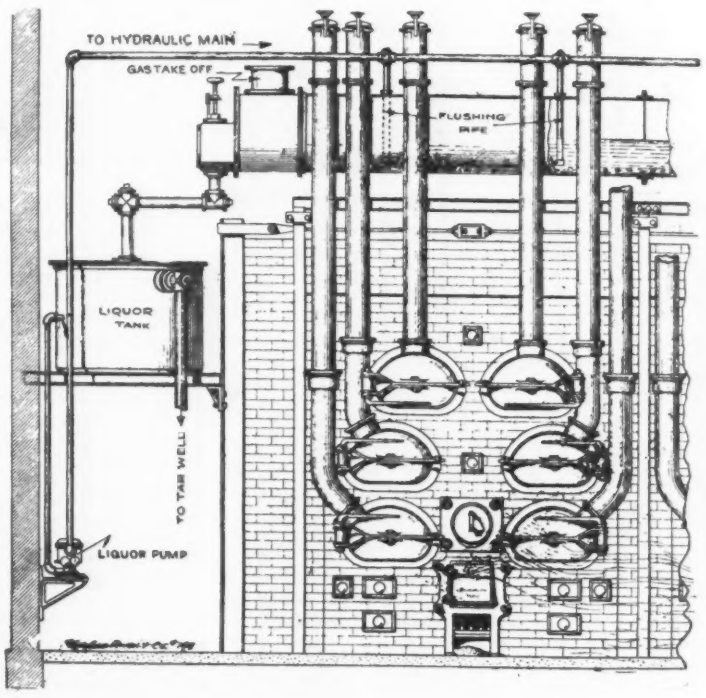
At *A*, Fig. 2, we show how the points burn at times. A flat surface is burned on in some cases, while in others a rough edge arises, as at *B*, Fig. 3. Some of the hand lamps are arranged at an angle, as in Fig. 4, and the point or arc of the carbons is made by the regulating disks at *C* and *D*. This pattern of lamp is used in picture machines, where the operator is at hand to govern it at all times. The series, or so-called potential lamp, is illustrated in Fig. 5. The power of the magnet in this lamp is varied as desired by the employment of the series and shunt coil systems. The shunt coil is joined across the arc, and when the arc is "long" the current in this coil is "great." The combined strength of the combination is "small," thus permitting the carbon to drop together and make a steady light.

In Fig. 6 is one of the modes of effecting a post union with serial cord strands. The strands of wire are freed from the fabric coating by use of a knife, and these strands are entwined about the post as exhibited. Then the loop is closed with a piece of wire and we get the union, as at *F*.

Fig. 7 shows the manner of joining up two butt ends of a cable. First scrape off the fabrical covering back about 1½ inches. Then you insert the wires in the bore of the union *G*, which is a copper device properly furnished with set screws. If necessary an additional security can be obtained by winding wire about the cable, as at *H*, extending the ends over to screw heads on either side of the metal union.

Flushing Apparatus for Hydraulic Mains of Coal Gas Benches,

The Gas Machinery Company, of Cleveland, O., is putting on the market an apparatus for flushing the hydraulic mains of coal gas benches that is attracting much attention. The stoppages caused by pitch, carbon and heavy tar, are frequent in hydraulic mains, when high heats are used in the retorts and no provision is made to maintain a constant flow towards the tar and liquor take off. The illustration



shows a circulating system sending tar and liquor from hydraulic main flow into the liquor tank, where the tar and liquor are separated. To create a constant flow in the main, the ammonia pump takes the liquor from the tank and forces same through a number of jets into the bottom of the main. These jets are placed at regular intervals and point towards the tar and liquor overflow. As the re-circulated liquor is hot and weak, it cannot increase the amount of ammonia in the foul gas by evaporation.

Gas and What It Can Do, as Shown in the Food Fair.

A correspondent in Boston, Mass., writing under date of the 22d inst., incloses the following:

The many and varied ways in which gas may be used for lighting, heating and cooking are interestingly demonstrated in the exhibit of the Boston Consolidated Gas Company, of 24 West street, at the Food Fair now being held in Mechanics' Building.

The booth occupied by the exhibit, directly beneath Sousa's Band in the balcony, is the most effective argument that could be offered for gas as the ideal means of illumination. It is in the form of a Grecian pavilion, the arches and columns artistically festooned and entwined with myriads of lights of intense brilliance.

Conspicuous among the many new and unique styles of holders and brackets is that known as the "Jungle Portable Stand." It is in the shape of an elephant's head, the upraised trunk holding the burner.

In the lamp display the gamut of artistic effect has been run, from the beautiful bronze female figure, holding aloft brilliant globes, to the smallest, but none the less artistic device, to be used for a night lamp.

For the benefit of the housekeeper a special demonstration is given during the day and night of the many economical ways that gas may be used about the kitchen.

The illustrations include the new toasting apparatus called the Vulcan Toaster, and the porcelain compartment vegetable boiler. With the former four pieces of toast may be made and a pot of coffee heated simultaneously. No asbestos is used; the toast is clean and unburnt.

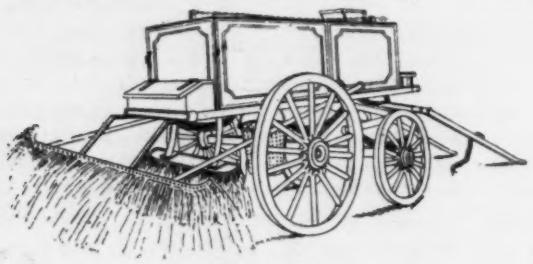
With the compartment boiler three vegetables may be boiled at once, one in each of the three compartments.

For heating purposes the equipments shown are equally diversified. Radiators of all shapes and sizes, gas logs, and many other arrangements to drive away cold through the medium of gas heat are exhibited.

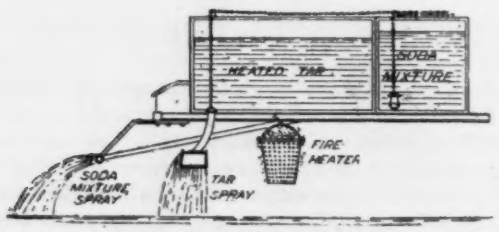
To emphasize the points brought out in the demonstration given at the Company's booth, hundreds of testimonials, many of them framed, about the display are shown.

Water Van Adapted to Road Tar Painting.

The *Gas World* says that if the use of tar for laying the dust on our highways has not actually passed the experimental stage, it bids fair to reach that point in the not distant future. The efficacy of tar for the purpose in view is virtually beyond question, but there remains to be devised a handy and cheap method of applying the tar. In the interview with Mr. H. P. Maybury, County Surveyor of Kent, published recently, a machine that would reduce hand labor and get over the ground quicker was mentioned as a desideratum. A week later was described the Lassailly machine, which strikes one as rather a costly affair. Now Mr. Frank G. Vivian, of Llanelly, sends a couple of sketches showing his idea of how an ordinary water van may be converted into a tar spraying machine. The sketches are self-explanatory, and they are offered as a contribution to a subject that is now attracting much attention, not only among road surveyors, but also among gas managers, who are looking forward to a new opening for the contents of their tar wells.



Perspective View.



Section.

Water Van Converted into Tar Spraying Machine.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

It is reported that a change of ownership is likely to occur in the properties of the Madison (Wis.) Gas and Electric Company. The same parties are negotiating for the properties of the Madison and Interurban Traction Company.

The Pintsch Compressing Company has completed its station at Billings, Mont., the service from which is intended chiefly for the passenger cars of the Burlington Railroad. The station was erected and equipped at an expenditure of $75,000.

We are indebted to Mr. Jacob D. von Maur, Superintendent of the Street Department of the Laclede Gas Light Company, of St. Louis, Mo., for the following copy of an application recently made to the Company for a consumer's meter:

I've tried in vain to get a meter,
Or some machine that is a reader.
I've worn the 'phone and lost my lungs;
My soles are gone. I need some tongues
To tell you that I have no light
To see to read nor take a bite.
Please have your man come right away—
And save me cussin' every day.
I get up at night to strike a match
And stub my toes against the latch;
So help me out, I know you will;
The first of the month send me a bill.

Mr. John P. Winslow formerly Manager of the East Boston (Mass.) Gas Company, and later as Cashier of the Boston Consolidated Gas Company, died at the Boothby Hospital the night of the 26th ult. He was in his 50th year.

The new holder planned for the Westerly (R. I.) Company is rated to retain 100,000 cubic feet.

The voters of Kirkwood, Mo., are to ballot, on the 24th inst., over the proposition to grant a franchise for the establishment there of a gas plant, the promoter of which is the General Service and Development Company. The grant limits the Company to a minimum sale's rate of $1.20 per 1,000 cubic feet, and the life of the franchise is fixed at 20 years.

The new plant of the Oelwein (Ia.) Gas Company is in commission. There is every reason to believe that the enterprise will prove a remunerative one, since the concern starts off with close to 100 consumers, these including several of the most prominent storekeepers of the town.

Mr. Udolpho Snead, President of the Louisville Gas Company, has just returned from a trip abroad, which sojourn lasted from mid July. Mrs. Snead accompanied him, and while they both agree that Italy is soulful, that England is homelike and that France is beautiful, their final verdict is that America is great.

The Council of Yazoo City, Miss., has granted a franchise for the operation of a gas works there to Mr. J. T. O'Rourke, of New Orleans, and Mr. R. C. Houston, of Hattiesburg, Miss. The franchise is to run for 25 years, and it is stipulated that the mimimum selling rate shall not exceed $1.85 per 1,000 cubic feet. Construction work is to be commenced at once.

The Gadsden (Ala.) Gas Light and Power Company has been reorganized, so writes Mr. B. F. Howes, of Mobile. The Company is capitalized in $75,000, and its officers are: President, John D. Hammonds, of Gadsden; Vice-President and General Manager, Wm. Miller —Mr. Miller is Superintendent of the Birmingham (Ala.) Light and Power Company; Secretary, T. H. Stephens, of Gadsden; Treasurer, C. O. Simpson, of Birmingham. The time for the completion of the plant has been fixed for December 31, 1907.

Mr. W. H. Pearson, General Manager and Secretary of the Consumers Gas Company, of Toronto, Ont., has notified the residents that hereafter the selling rate, "when accounts are paid within the specified time," will be 75 cents per 1,000 cubic feet. The active Mr. Pearson (and may he remain active for many a day) certainly sees to it that the gas consumers get the benefit of every gain that the Company makes in the development of its works, which are now model ones in every respect.

The sale, by Master-in-Chancery Lawrence, at auction, of the plant and properties of the Marquette (Mich.) County Gas Light and Traction Company, of Marquette, was brought off pursuant to notice. The pur-

chaser was Mr. Granger Farwell, of Chicago, representing the bondholders. His bid was $280,000.

MR. JOHN J. ROOHAN has resigned his position with the Saratoga Springs (N. Y.) Gas, Electric Light and Power Company, to take the position of Manager of the Oneida (N. Y.) Gas and Electric Light Company.

MR. JOHN H. GOODWIN, who has for some time been foreman of the Rockingham County (N. H.) Light and Power Company's gas system, has been appointed Superintendent of the Northampton (Mass.) Gas Company's plant, succeeding the late Mr. H. C. Crafts.

ADVICES from Newburg, N. Y., are to the effect that the New York State Commission of Gas and Electricity has denied the application of the would be owners of the Fishkill and Matteawan (N. Y.) Gas Company—it is now in the hands of a receiver—to issue $90,000 of bonds on the Company. The Southern Dutchess County Gas and Electric Company, which was to be the undertaker or overtaker, however, may issue, according to the ruling, bonds in the sum of $50,000 and stock to the amount of $10,000.

HERE is something from the Fall River (Mass.) *News*, dated October 22d; we hope the *News* is inaccurate in this instance: "A city official who spent a large amount of time in assisting Alton D. Adams, the Worcester lawyer, in investigating the gas situation here and in preparing extensive typewritten data for his consideration, is wondering where he is to come in on the matter of compensation. The Worcester man's bill was for 44 days at $20 a day and his expenses, and this bill has been paid. The local man, whose services were probably worth at least $100 merely as clerical duties, wrote during the summer to Mr. Adams to ask what compensation he was to receive. After a time Mr. Adams replied that he supposed the work the local man had done was done as a city official and that if there was any overtime pay coming it should come from the city; he was not interested at all in the matter. Now that the bill presented by Adams has been paid, the local man feels pretty near certain that he has been lost in the shuffle."

AT the special meeting of the shareholders of the Pittsfield (Mass.) Coal Gas Company, called to determine whether the capital stock should be increased from $250,000 to $300,000, the proposition was accepted. The Company will expend a considerable sum on betterments, prominent in the scheme being notable main extensions.

THAT Nestor of the Pacific Coast gas men, the right royal W. A. Aldrich, General Manager of the Tacoma Gas Light Company, recently caused to be published the following letter to the Commissioners of Public Lighting of that fair Washington city, which needs no explaining respecting the subject with which it is concerned—the letter was forwarded to the Tacoma *Ledger*: "I want to answer Commissioner Woods in reference to his statement that the installation of Nernst lamps is making considerable inroad into the gas lighting business. I have not the pleasure of knowing the Commissioner, and understand he is a very estimable gentleman, but if he thinks that the Nernst light will supersede the wonderful Humphrey gas arc, he has another guess coming. It may be information to the Commissioner to know that Tacoma is more than 2 years behind the times in the use of the Nernst lamp. They have been using them for the past 2 years in the East, but consumers found that after using them for a while the lights turned red. The same results will be found here after the lamps have been in use for a few months. Personally, I welcome their advent here, as not only are they expensive for the city, but use considerably more current than the old lights. For the Commissioner's information I will say that this Company has installed, since September 5, 656 Humphrey gas arcs, 75 per cent. of which business has been obtained from the users of electricity. The more Nernst lamps that can be put in the more money the city will lose, especially at the present cost of installation, and the Commissioner will do well not to dispose of the old 5-ampere arcs to logging camps, as in a few months' time the junk pile will be filled with Nernst lamps, and those who prefer the luxury of electricity will be calling for the return of the old arc lights. The wonderful improvement in our lighted streets is caused by the extraordinary demand for Humphrey outside arcs. From Pacific to Tacoma avenue it is a revelation in lighting, but we cannot understand why the Commissioner should want to credit it to electricity, as even he cannot but admit the superiority of gas arcs over electric arcs, Nernst or otherwise. The Commissioner is perfectly welcome to the small consolation that he may derive from the fact that Nernst lights are being placed where 5-ampere arcs have hitherto been used, considering that it is the Humphrey gas arc that is instrumental in placing so many electric arcs on the Commissioner's junk pile. I would not have asked you to make this statement were it not for the publicity given to th report of the Commissioner."

MR. A. E. RICHARDSON has planned the changes that are to be mad in the office building of the New York and Queens Gas Company on Main street, Flushing, L. I. General Manager Thomas has approve the architect's scheme, and work thereunder is probably now in activ prosecution.

THE Trustees of the Troy (N. Y.) Gas Company have perfected th e following organization: President, Edward Murphy, Jr.; Vice-President, Wm. Kemp; Secretary and Treasurer, C. E. Davenport.

THE New Haven (Conn.) Gas Light Company has purchased the brick building, covering the lots on 72 and 74 Crown street, from the Mersick estate, at a price not far from $35,000—at which figure the property i undoubtedly an excellent investment. As the Company does not take possession until May 1st, it is a trifle premature to say what changes i proposes to make in the structure; but it can be counted on for a certainty that when the building is adapted to the purposes for which it is meant another handsome office structure will be added to the many now existing in the Elm City.

THE plant for the Biloxi (Miss.) Gas Company, the contract for the construction of which was carried out by Mr. F. D. Moses, has been accepted by the owners, and gas is being supplied to the residents, who are vastly pleased with the service rendered.

THE residents of Greenwich, Conn., are persistently saying that gas shall be supplied to them. As is well known the local electric lighting concern has a gas franchise for the town, but has continuedly blinked the view of practical work under its terms.

GOOD-BYE to free gas stoves in Kansas City, Mo. The Gas Company, at a Directors' meeting held last month, decided that as the gas rate on natural account has been put at an average figure of 25 cents per 1,000 cubic feet for the next 30 years, gas stoves shall no longer be furnished free.

MR. A. E. DUNN, of the Greenville (Ills.) Gas Company, has succeeded in convincing the local authorities that tar will prove an excellent agent for keeping down dusty driveways. A thorough trial of the system is to be there made.

PROF. MARKEL, of the Bridgeton, N. J., High School, recently chaperoned a party of his advanced students (the word chaperoned is used advisedly) through the mazes of the Bridgeton gas works. The chief instructor in the revealment to the lads and lassies of the mysteries of the gas plant was Superintendent Harding, whose clever descriptions of the apparatus and its uses were interestedly listened to by the visitors.

THE scheme of Mr. S. J. Glass, General Manager of the Milwaukee Gas Light Company, to enlist the services of the religious and charitable institutions of that city in disposing of gas cooking appliances, with advantage to the former and with profit to the latter, has been signally successful. A description of the scheme is in our Item Columns, issue Oct. 8, p. 635. About 30 of the institutions have gone heartily into the scheme, and the results so far secured are little short of surprising.

OMAHA, NEB., has adopted an ordinance specifying and defining the sections of the city in which gasholders can be constructed. Outside of the designated sections such structures shall not be placed.

MR. WARREN L. WILLIS, formerly Manager of the Gas Appliance Exchange, that was maintained at the instance of the Albany Foundry Company, in Troy, N. Y., died at his home in that city the afternoon of the 25th inst. He was in his 31st year. In 1905 he was elected Alderman of the Fourth Troy ward, and was a man generally well liked.

MR. WM. HAMMILLE and associates, of Hamilton, O., is endeavoring to secure a franchise for the operation and construction of a gas plant in Eaton, O.

ACCORDING to the quarterly statement (quarter ended September 30) filed by the United Gas Improvement Company with the Controller of Philadelphia, the Company under the existing lease was indebted to the city in the sum of $161,585.61. For the corresponding period of last year the payment amounted on lease account to $150,317.22.

MR. L. RANCKE, of Baltimore, Md., reports brisk business on account of the Baltimore Retort and Firebrick Company, the result of frequent late flying trips made by him.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHAS. E. SANDERSON,
MANAGER.

PUBLISHED ON EACH MONDAY OF THE YEAR AT
No. 42 Pine Street, New York.
Telephone, 2996 John.

TERMS:

SUBSCRIPTION—Three Dollars per annum, in advance.
Single copies, 10 cents.

The JOURNAL is the official organ of the
NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, NOVEMBER 5, 1906.

The Market for Gas Securities.

Consolidated was dull and certain since time of last writing, with a tendency towards low prices. In fact it sold at 137. A buying inquiry at that figure caused a rapid advance, the opening being made to-day (Friday) at 139 to 140. Towards noon a sale at 140 was recorded. It looks to us that the stock is cheap.

Brooklyn Union is in "the dumps." Buyers and sellers are divided as to its value, the range being between 110 to 120. In out-of-town shares nothing of moment is reported, although Boston issues are in fair demand. The 1¼ per cent. dividend on Peoples, of Chicago, is payable the 26th inst. The United Gas Improvement Company has secured control of the Syracuse (N. Y.) Lighting Company, but the details of the transfer are not yet public property.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

NOVEMBER 5.

☞ All communications will receive particular attention

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	139	140
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	101	104
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	..	105
Mutual	3,500,000	100	190	225
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	99	101
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p.ct.	1,000,000	..	98	104
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	101	103
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	108	111
Con. 5's, due 1945, J. & J.	1,500,000	..	104	110
Standard	5,000,000	100	140	160
Preferred	5,000,000	100	155	175
1st Mtg. 5's, due 1930, M. & N	1,500,000	1,000	104	108
The Brooklyn Union	15,000,000	1,000	110	120
1st Con. 5's, due 1948, M. & N	15,000,000		107	..
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Bay State	50,000,000	50	5/16	¾
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	..	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	9	10
" " Bonds, 5's	5,250,000	1,000	75	80
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	106¾
Cincinnati Gas and Electric Co.	29,500,000	100	100⅛	101
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	90	..
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	..	95
Preferred	3,026,500	100	107⅛	108
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	..	90
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	..	..	100
Detroit City Gas Co.	5,000,000	50	..	50
" Prior Lien 5's	4,618,000	1,000	..	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	110	112
" Bonds, 5's	10,500,000	..	107⅛	108½
Indianapolis	2,000,000	..	60	70
" Bonds, 5's	2,650,000	..	104½	105
Jackson Gas Co	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,823,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	.	105
Preferred	2,500,000	100	95	110
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	85	87
Massachusetts Gas Companies of Boston	25,000,000	100	58	59¼
Preferred	25,000,000	100	87	88
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	6,000,000	..	137	138
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	88⅛	88¾
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	..
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	104¼	105¼
San Francisco, Cal.	15,800,000	100	..	..
St. Joseph Gas Co. 1st Mtg. 5's	751,000	1,000	92	..
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¼	..
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047 000	1,000	102	..
Washington, D. C	2,600,000	20	283¾	285
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
Wilmington, Del	600,000	50	20	..

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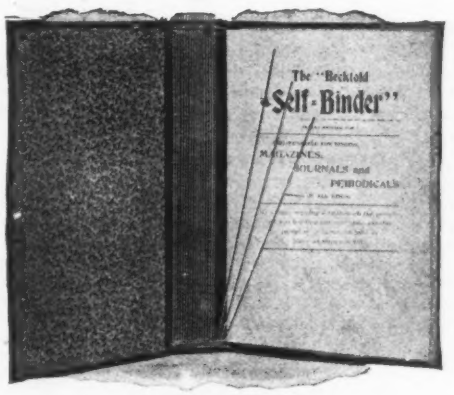

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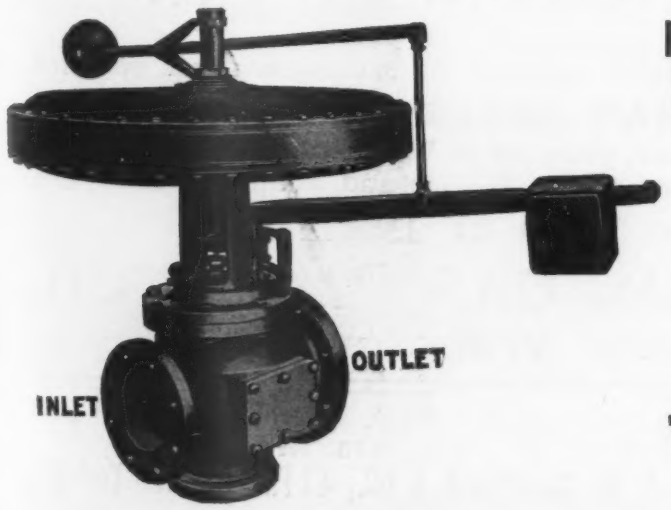

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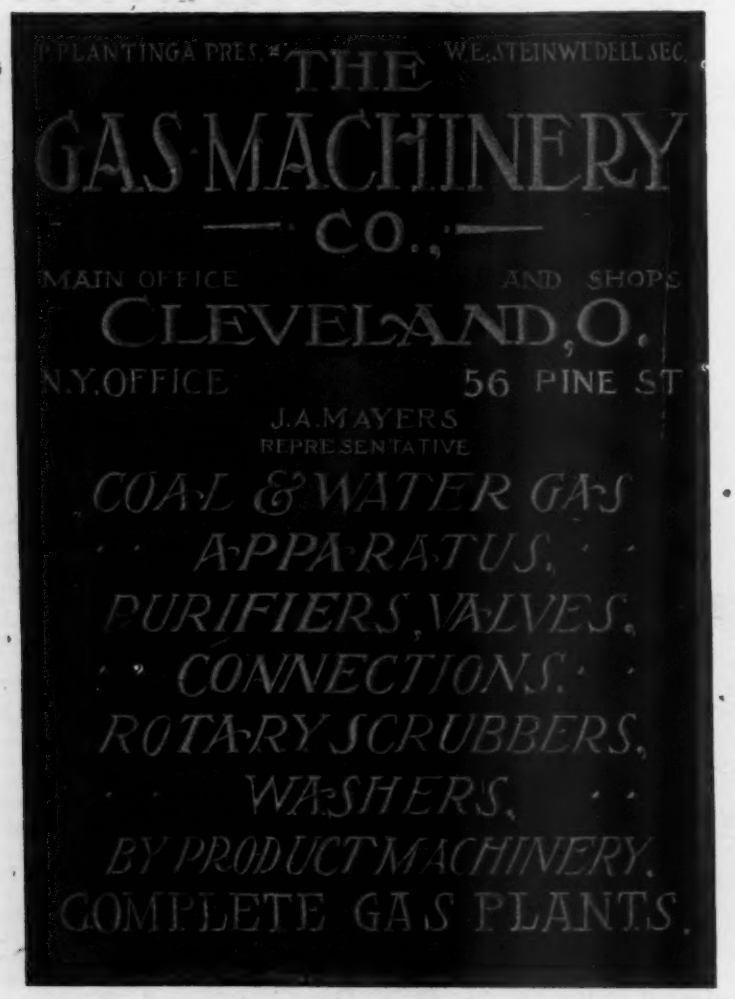

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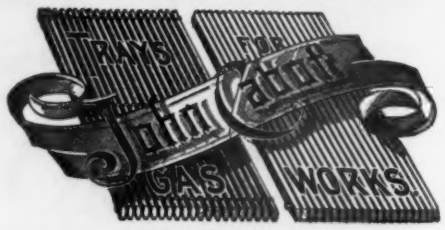

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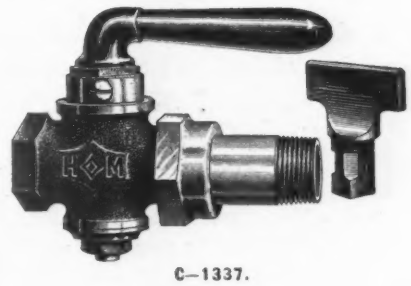

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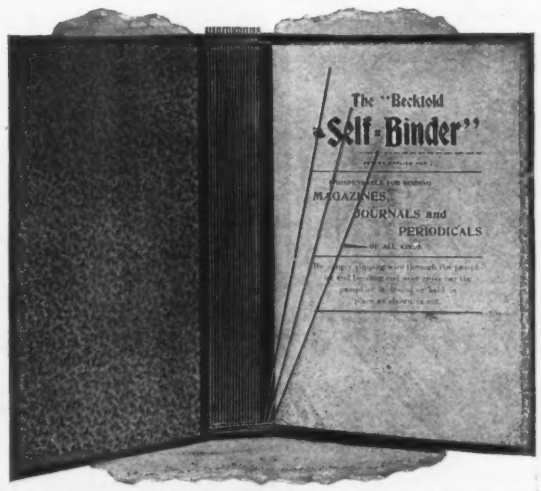

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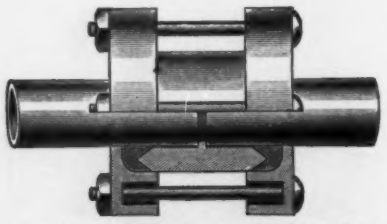
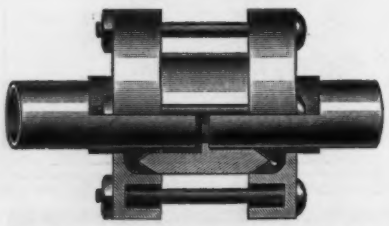

Regular Coupling, Style 1, for Plain End Wrought Iron Pipe.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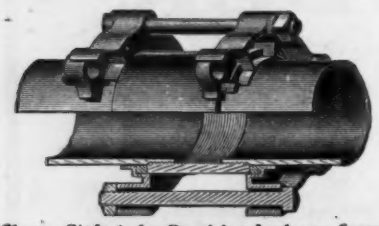
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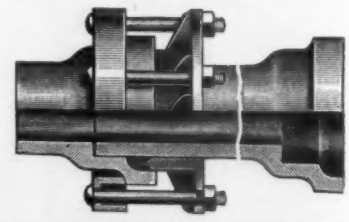
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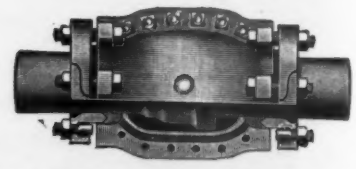
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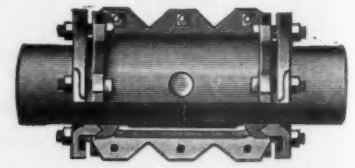
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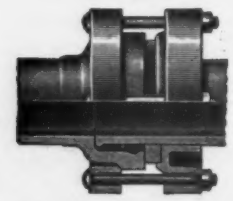
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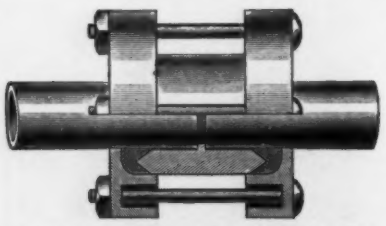
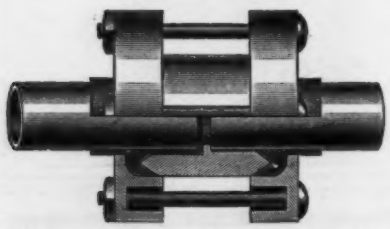
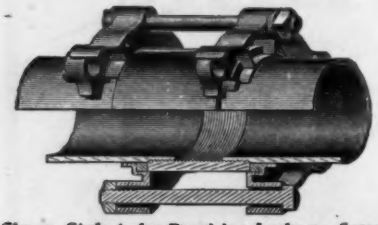

Regular Coupling, Style 1, for Plain End Wrought Iron Pipe.


Insulating Coupling, Style 5, for Plain End Wrought Iron Pipe.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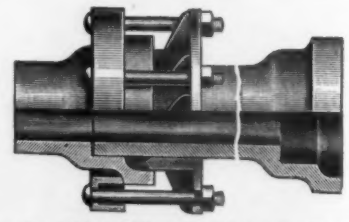
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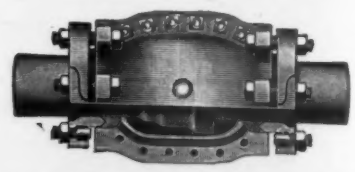
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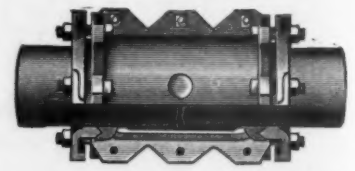
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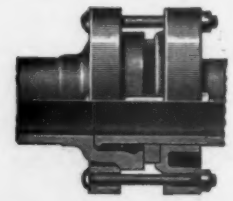
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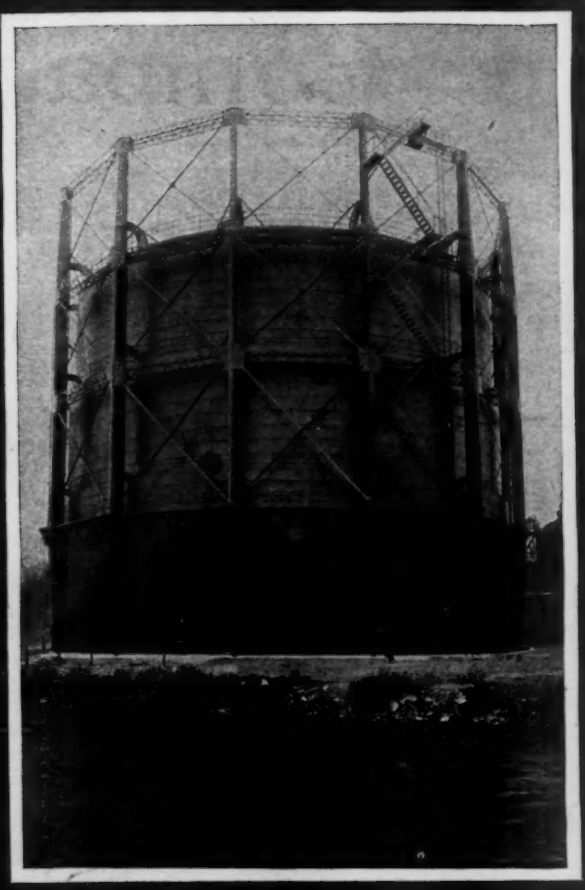

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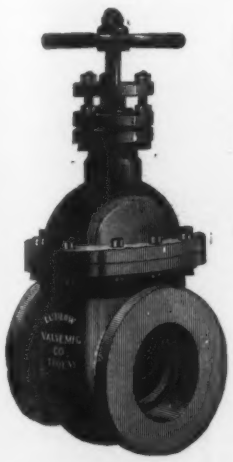

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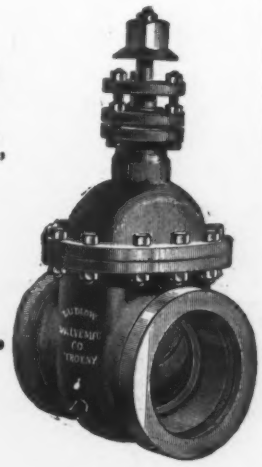

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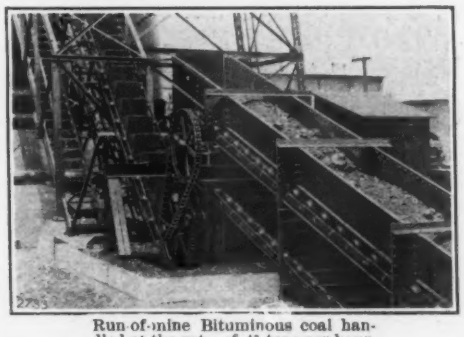

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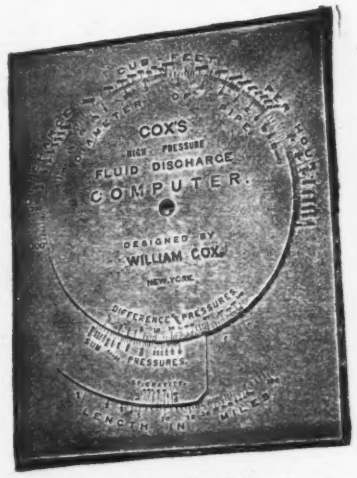

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p_2 = absolute terminal pressure in pounds per square inch,

L = length of pipe in miles,

w = specific gravity of the fluid when air = 1.

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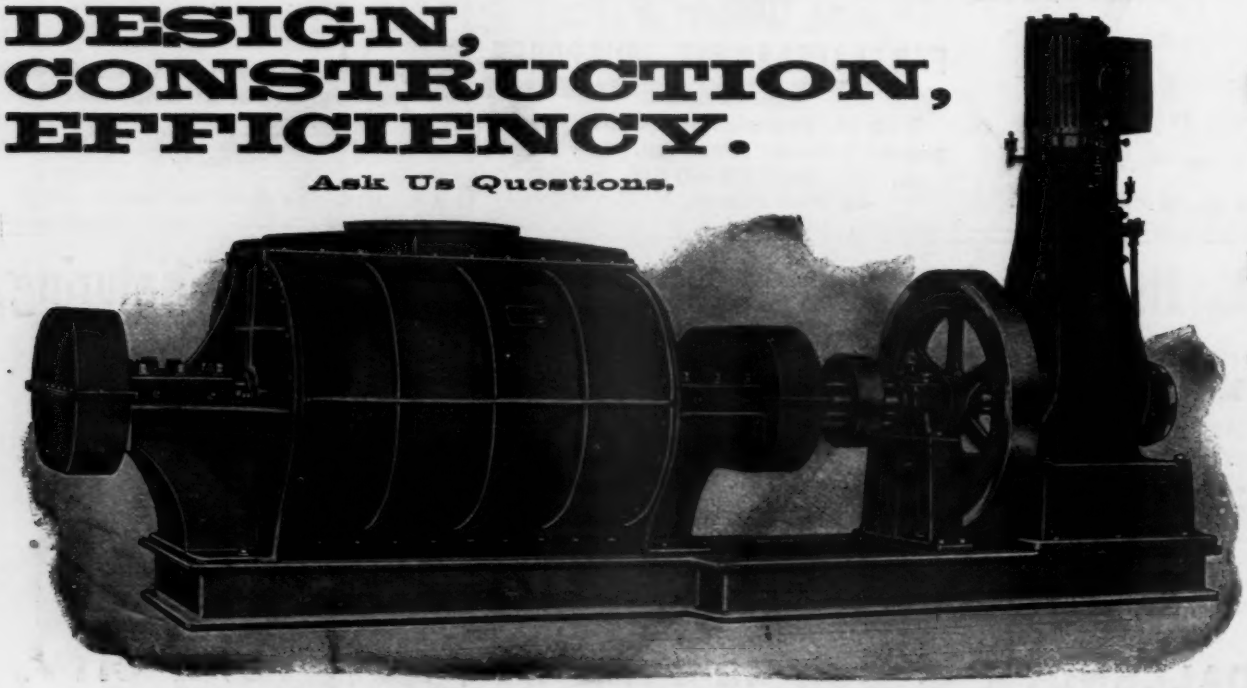

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Also, FLANGE PIPE, LAMP POSTS, Etc.

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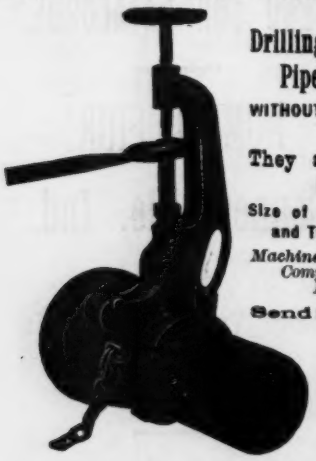

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WITHOUT ANY ESCAPE OF GAS.

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Machines Sent to any Gas Company for Thirty Days' Trial.

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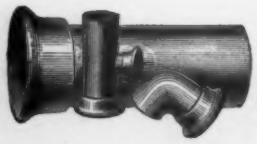

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For Shutting Off Gas in Mains

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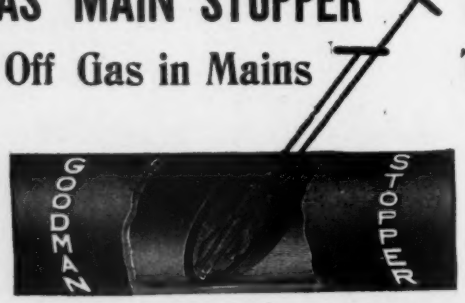

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THE PURIFIED GAS REVIVES THE FOULED OXIDE.

FIELD'S ANALYSIS

For the Year 1905.

An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland. Being the 37th Year of Publication.

COMPILED AND ARRANGED BY **JOHN W. FIELD,**

Secretary and General Manager of The Gas Light and Coke Company, London.

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AMERICAN METER CO.,

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Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

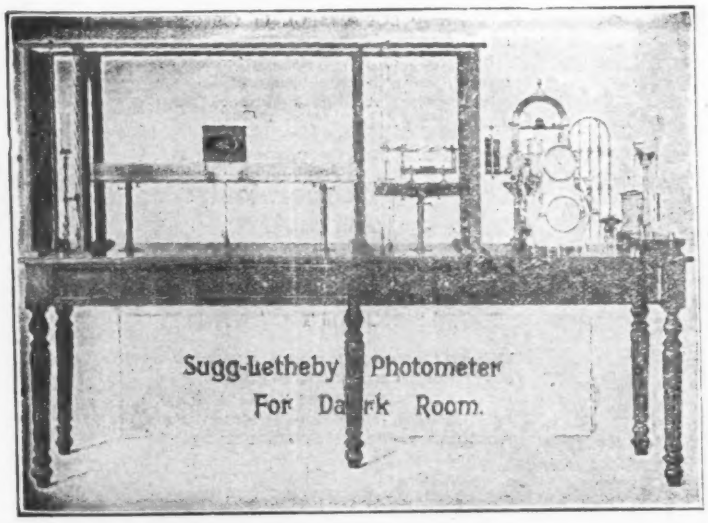
NOVEMBER, 1906.

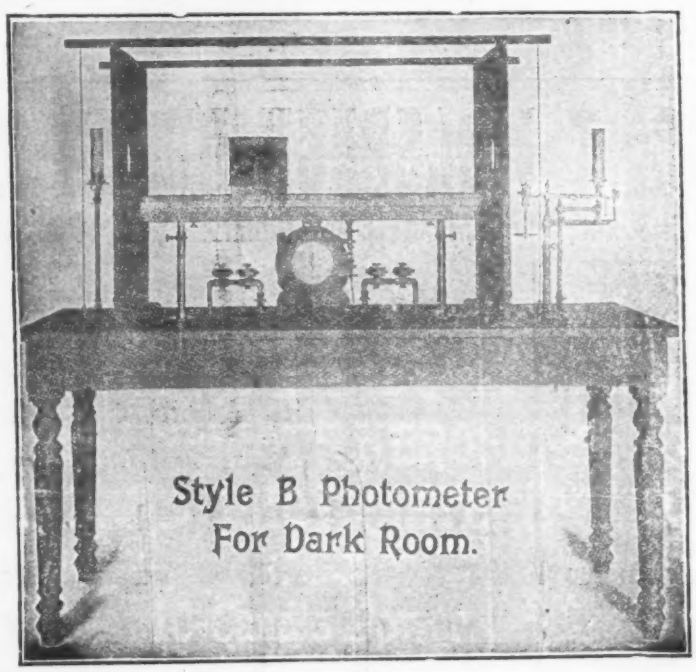
Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.
Thu.	1	No L.	No L.
Fri.	2	5.30 PM	7.10 PM
Sat.	3	5.30	7.50
Sun.	4	5.20	8.30
Mon.	5	5.20	9.10
Tue.	6	5.20	10.00
Wed.	7	5.20	10.50
Thu.	8	5.20 LQ	11.50
Fri.	9	5.20	12.50 AM
Sat.	10	5.20	1.50
Sun.	11	5.20	3.00
Mon.	12	5.20	5.40
Tue.	13	5.20	5.40
Wed.	14	5.20	5.40
Thu.	15	5.20 NM	5.40
Fri.	16	5.20	5.40
Sat.	17	5.20	5.40
Sun.	18	5.10	5.50
Mon.	19	5.10	5.50
Tue.	20	8.20	5.50
Wed.	21	9.20	5.50
Thu.	22	10.30 FQ	5.50
Fri.	23	11.30	5.50
Sat.	24	12.30 AM	5.50
Sun.	25	1.30	6.00
Mon.	26	2.30	6.00
Tue.	27	3.30	6.00
Wed.	28	4.30	6.00
Thu.	29	No L.	No L.
Fri.	30	No L. FM	No L.

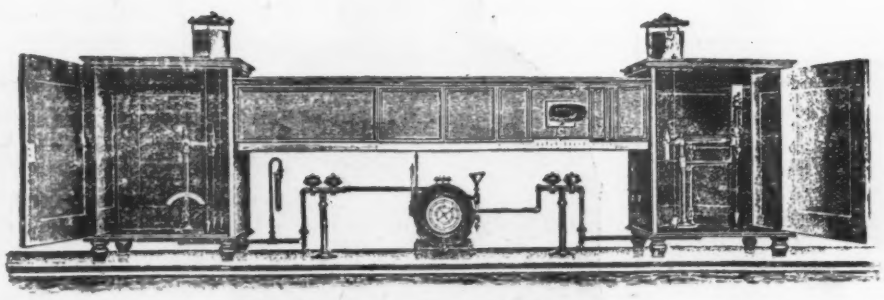
TOTAL HOURS DURING 1906.

By Table No. 1.

	Hrs. Min.
January	223.40
February	190.40
March	192.10
April	167.00
May	152.20
June	142.10
July	150.20
August	157.40
September	170.00
October	185.10
November	201.40
December	214.00
Total, yr.	2146.50







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

NOVEMBER, 1906.

Day of Week.	Date.	Table No. 2. NEW YORK CITY. All Night Lighting. Light	Extinguish.
		P. M.	A.M.
Thu.	1	4.45	5.35
Fri.	2	4.45	5.35
Sat.	3	4.45	5.35
Sun.	4	4.45	5.35
Mon.	5	4.40	5.45
Tue.	6	4.40	5.45
Wed.	7	4.40	5.45
Thu.	8	4.40	5.45
Fri.	9	4.40	5.45
Sat.	10	4.40	5.45
Sun.	11	4.40	5.45
Mon.	12	4.30	6.00
Tue.	13	4.30	6.00
Wed.	14	4.30	6.00
Thu.	15	4.30	6.00
Fri.	16	4.30	6.00
Sat.	17	4.30	6.00
Sun.	18	4.30	6.00
Mon.	19	4.25	6.00
Tue.	20	4.25	6.00
Wed.	21	4.25	6.00
Thu.	22	4.25	6.00
Fri.	23	4.25	6.00
Sat.	24	4.25	6.00
Sun.	25	4.25	6.00
Mon.	26	4.20	6.10
Tue.	27	4.20	6.10
Wed.	28	4.20	6.10
Thu.	29	4.20	6.10
Fri.	30	4.20	6.10

TOTAL HOURS DURING 1906.

By Table No. 2.

	Hrs. Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.45

NEW YORK, 318 West 42d Street.
BOSTON, 820 Beacon Building.
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ST. LOUIS, 712 Roe Building.
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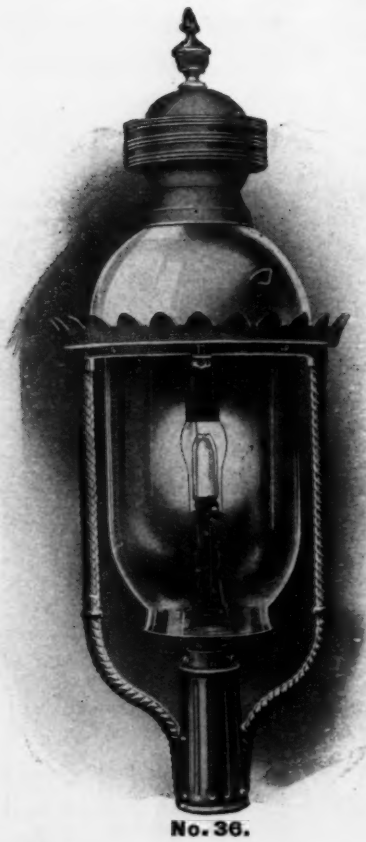

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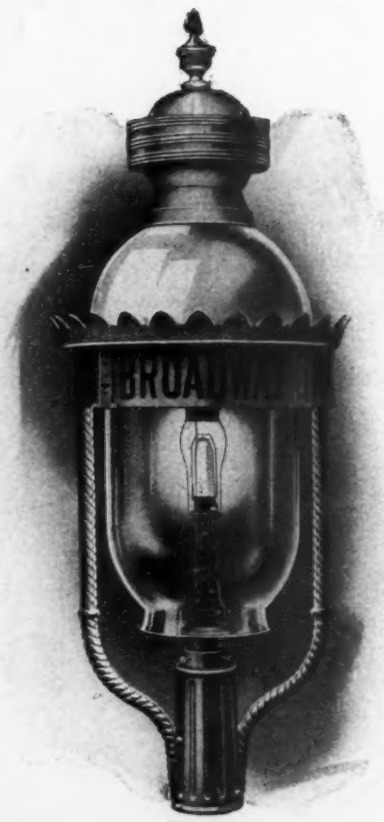

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Standard Length, 30 inches.
The New No. 7 Welsbach Dining Room Fixture, when ordered, will be sent complete, as follows:

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1 No. 306 Chimney (air hole).
1 Fourteen-inch GREEN Art Glass Shade, with six-inch Green Beaded Fringe.

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Finished in oxidized copper, oxidized brass, etc., 25 cents extra.

Shades in Ruby and Green--Ruby, Amber and other colors, without extra charge.

Special colors require a few days extra time to fill orders.

Green Shades will be shipped unless otherwise ordered.

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Seattle, Wash. (2d contract).	**Nazareth, Pa.** (2d contract).	**Washington, D. C.** (3d contract).

TOTAL SETS TO JULY 1, 1906, - - - - - 618

TOTAL DAILY CAPACITY TO JULY 1, 1906, 488,930,000 CUBIC FEET.

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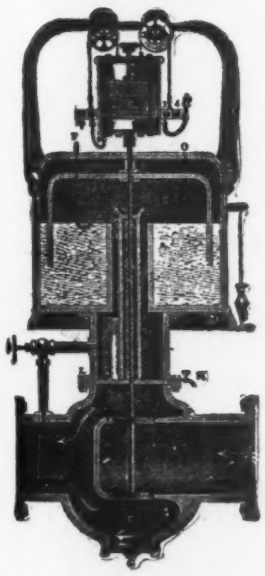

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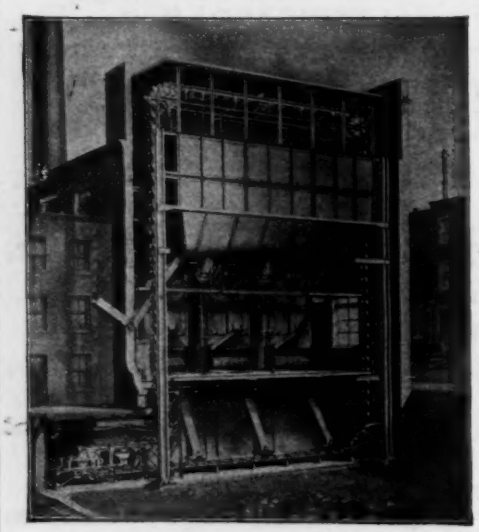

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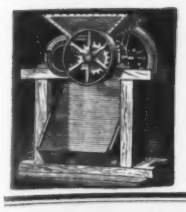

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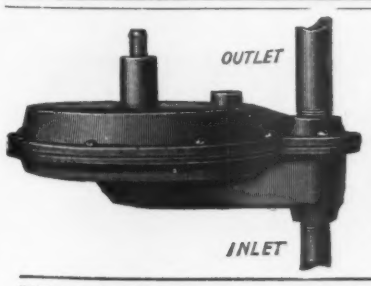

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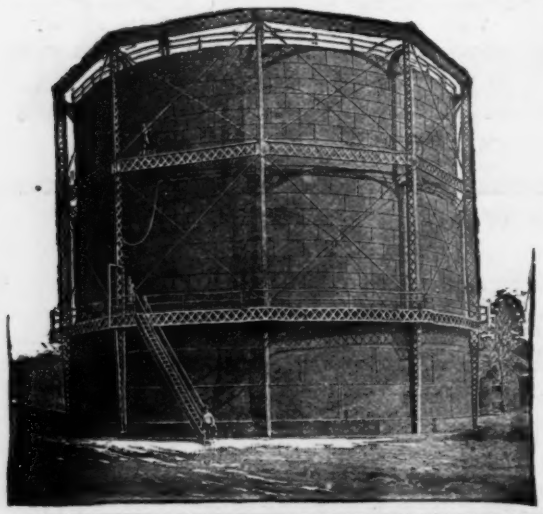

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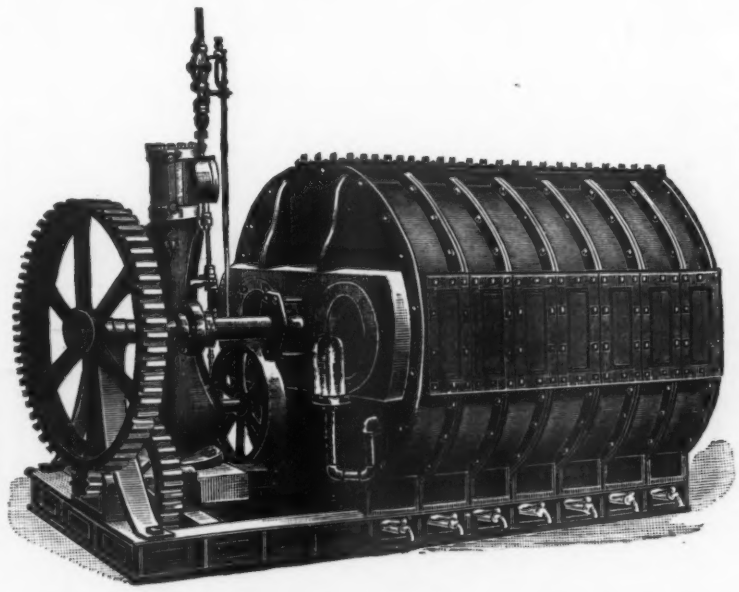

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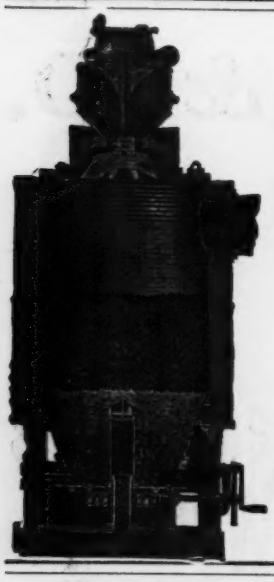

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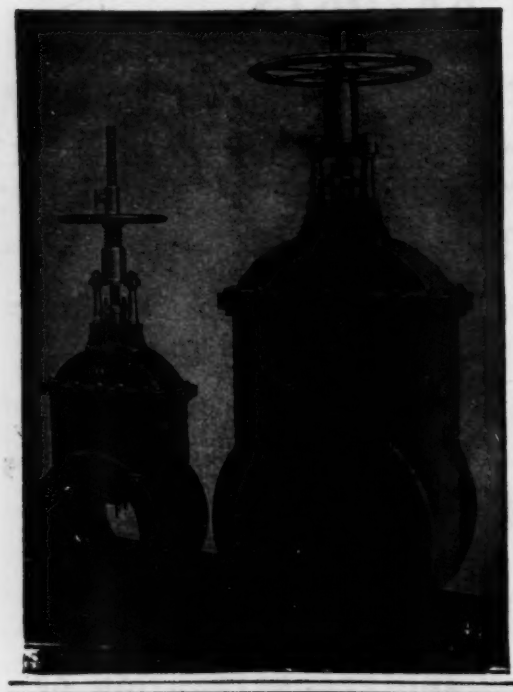

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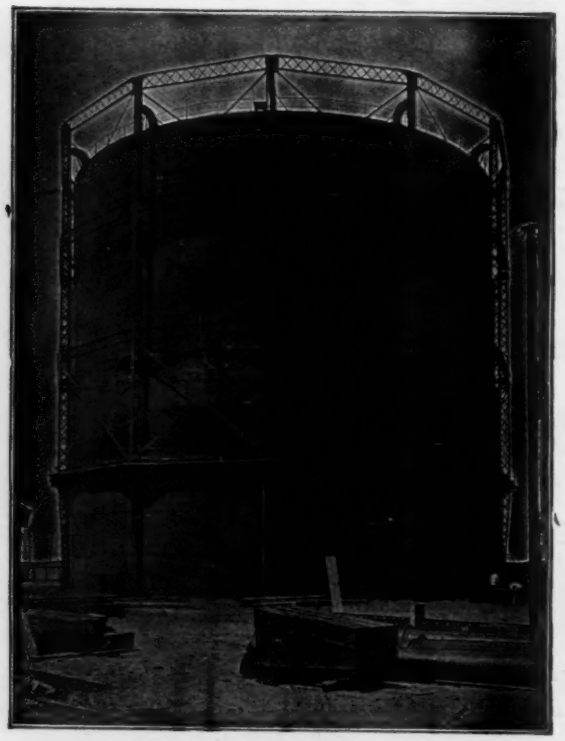

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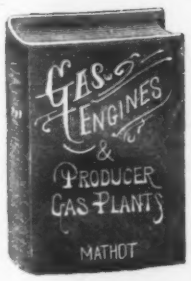

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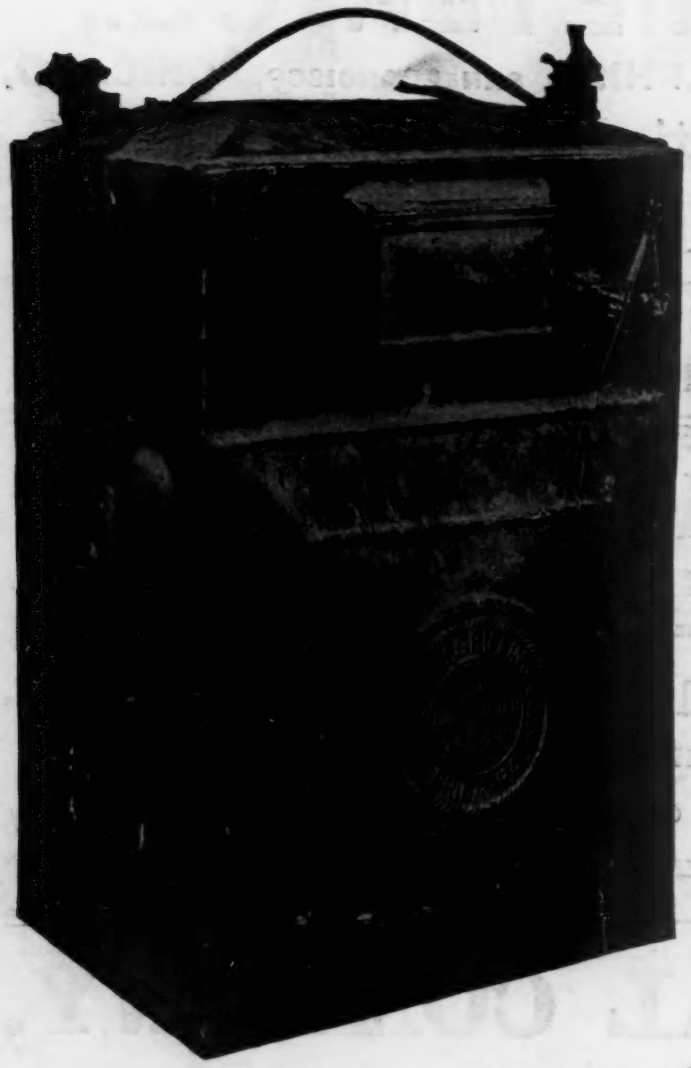

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